

NOVEMBER 5, 2015

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# Calleguas Creek Watershed TMDL Compliance Monitoring Program Seventh Year Annual Monitoring Report

Monitoring and Reporting Program for the Nitrogen  
and Related Effects; Organochlorine Pesticides,  
Polychlorinated Biphenyls and Siltation; Toxicity;  
Salts; and Metals and Selenium Total Maximum  
Daily Loads

*submitted to:*

LOS ANGELES REGIONAL WATER QUALITY CONTROL BOARD

*prepared by:*

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*on behalf of the:*

STAKEHOLDERS IMPLEMENTING TMDLS IN THE CALLEGUAS  
CREEK WATERSHED

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- Appendix B. Calibration Event Summary for Salts TMDL
- Appendix C. Salts Rating Curves and Surrogate Relationships
- Appendix D. Toxicity Testing and Toxicity Identification Evaluations Summary
- Appendix E. Laboratory QA/QC Results and Discussion

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- Attachment 1. Toxicity Data
- Attachment 2. Monitoring Data
- Attachment 3. Salts Mean Daily Flows: July 2014-June 2015
- Attachment 4. Chain-of-Custody Forms

# Executive Summary

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## TOTAL MAXIMUM DAILY LOADS

There are six Total Maximum Daily Loads (TMDLs) currently effective and being implemented in the Calleguas Creek Watershed. They include:

- Nitrogen Compounds and Related Effects in Calleguas Creek (Nitrogen or Nutrients TMDL)
- Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs) and Siltation in Calleguas Creek, its Tributaries, and Mugu Lagoon (OC Pesticides TMDL)
- Toxicity, Chlorpyrifos, and Diazinon in the Calleguas Creek, its Tributaries and Mugu Lagoon (Toxicity TMDL)
- Metals and Selenium in Calleguas Creek, its Tributaries, and Mugu Lagoon (Metals TMDL)
- Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL)<sup>1</sup>
- Boron, Chloride, Sulfate and TDS (Salts) in the Calleguas Creek, its Tributaries and Mugu Lagoon (Salts TMDL)

To address the monitoring requirements of the TMDLs, the Calleguas Creek Watershed TMDL Compliance Monitoring Program (CCWTMP) was established and a Quality Assurance Project Plan (QAPP) developed and approved by the Los Angeles Regional Water Quality Control Board (Regional Water Board) Executive Officer. The QAPP currently addresses monitoring requirements for the Nitrogen, OC Pesticides, Toxicity, Metals, and Salts TMDLs. The Trash TMDL is addressed through a separate monitoring plan and annual monitoring report. The primary purpose of this report is to document the seventh year monitoring efforts and results of the CCWTMP for the five TMDLs currently included in the QAPP.

## PROJECT ORGANIZATION

The CCWTMP is a coordinated effort with the various responsible parties that make up the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed (Stakeholders). Stakeholders identified in the TMDLs have developed a Memorandum of Agreement (MOA) that outlines an agreement to implement the CCWTMP.

The stakeholders to the MOA, for which this report fulfills the TMDL monitoring requirements, are as follows:

- **POTWs:** consisting of Camrosa Water District, Camarillo Sanitary District, Ventura County Waterworks District No. 1, and the Cities of Simi Valley and Thousand Oaks;

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<sup>1</sup> Information related to the Revolon Slough and Beardsley Wash Trash TMDL is not part of this report. The Trash TMDL annual report was submitted to the Regional Water Board on December 15, 2014.

- **Urban Dischargers:** consisting of the Cities of Simi Valley, Thousand Oaks, Camarillo, Moorpark and Oxnard, Ventura County Watershed Protection District, and the County of Ventura Public Works Agency;
- **Agricultural Dischargers:** consisting of the entities represented by the Ventura County Agricultural Irrigated Lands Group (VCAILG) within the Calleguas Creek Watershed, a subdivision of the Farm Bureau of Ventura County; and
- **Other Dischargers:** consisting of the U.S. Department of Navy and Caltrans.

## MONITORING EVENT SUMMARIES

Sampling events required by the Nitrogen, OC Pesticides, Toxicity, Metals, and Salts TMDLs during the seventh year of TMDL monitoring included four dry-weather events (Events 44, 45, 48, and 49) and two wet weather events (Events 46 and 47). Grab samples for salts were obtained during these events, but were not used directly to determine compliance at receiving water sites.<sup>2</sup> A summary of Events 44 through 49 is included in Table ES-1.

**Table ES - 1. Summary of Year 7 Monitoring Events**

Event	Type	Date	Mugu Lagoon			Freshwater Sites		
			Water Quality	Sediment Quality & Toxicity	Tissue	Water Quality & Toxicity	Sediment Quality & Toxicity	Tissue
44	Dry	Aug 2014	X	X	X	X	X	
45	Dry	Nov 2014	X			X		
46	Wet	Dec 2014	X			X		
47	Wet	Dec 2014	X			X		
48	Dry	Feb 2015	X			X		
49	Dry	May 2015	X		X	X		X <sup>1</sup>

1. Fish tissue collected in June 2015 as part of Event 49.

## COMPLIANCE SUMMARY

For the most part, the CCW is in compliance with the applicable interim or final WLAs and LAs currently in effect for the Nutrients, OC Pesticides, Toxicity, Metals, and Salts TMDLs. The following observations summarize the compliance status with these TMDL allocations:

- One exceedance of the interim WLA for 4,4'-DDT occurred this monitoring year.
- Exceedances of numeric targets for Nitrate-N and Nitrate-N + Nitrite-N were observed in Mugu Lagoon, Revolon Slough, Beardsley Wash, Calleguas Creek, Arroyo Las Posas, and Arroyo Simi. Most of the exceedances occurred during dry events. No exceedances of final nutrient WLAs were measured at any POTW.
- Four exceedances of the final MS4 WLAs for chlorpyrifos were measured at receiving water sites during the dry weather; however, there were no exceedances of the interim

<sup>2</sup> Grab samples for salts at receiving water compliance sites are used to develop statistical relationships between specific conductivity (EC) and salt constituents, which are in turn used to convert high-density EC data from continuous monitors in the field to time series of salt concentrations.

LAs. There were 12 exceedances of the final MS4 chlorpyrifos WLA during wet weather and one instance where the chlorpyrifos concentration was above the final MS4 WLA and the interim LA. In addition, there was one instance where the diazinon final MS4 WLA and interim LA were exceeded during dry weather. There were no exceedances of the final WLAs for chlorpyrifos or diazinon at any POTW.

- Exceedances of both the interim LA and MS4 WLA for total selenium were measured at the 04\_WOOD receiving water monitoring station in Revolon Slough during the four dry weather sampling events.
- Toxicity was observed at some locations in the watershed and Toxicity Identification Evaluations (TIEs) were initiated for all samples meeting the requirements in the QAPP. As a result, the Stakeholders are in compliance with the toxicity WLAs and LAs per the requirements of the TMDL.
- In general, receiving water sites were in compliance with interim LAs and MS4 WLAs established by the Salts TMDL; the only exception being exceedances of total dissolved solids, sulfate, and boron measured at 04\_WOOD in the Revolon Slough watershed. POTWs are in compliance with interim salts WLAs, with the exception of the Camarillo Water Reclamation Plant (WRP), which experienced exceedances of chloride, sulfate, and total dissolved solids (TDS). The exceedances of interim salts WLAs for the Camarillo WRP have resulted from increased influent salt concentrations due to water conservation and a shift in the composition of the water supplied within the service area. Since the process for addressing salts is a watershed effort involving significant capital investments, the Camarillo WRP has received a time schedule order to adjust the interim limits for TDS and sulfate. During the last monitoring year, application of interim limits for chloride was stayed by State Board Order 2003-0019. As a result, the interim limits in the TMDL are not the currently applicable interim limits for the Camarillo WRP discharge.

## **MONITORING PROGRAM CHANGES**

The QAPP was updated to incorporate the Salts TMDL monitoring approach. The QAPP was also updated for all constituents to reflect the recommendations identified in prior annual reports and reflect monitoring adjustments that have been implemented due to field conditions. The revised QAPP was submitted to the Los Angeles Regional Water Quality Control Board in December 2014. Monitoring for the 2015-2016 monitoring year is being conducted per the revised QAPP.

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# Introduction and Program Background

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## INTRODUCTION

In the Calleguas Creek Watershed (CCW), the following six total maximum daily loads (TMDLs) are currently effective and include monitoring requirements in the implementation plans:

- Nitrogen Compounds and Related Effects in Calleguas Creek (Nitrogen or Nutrients TMDL)
- Organochlorine (OC) Pesticides, Polychlorinated Biphenyls (PCBs) and Siltation in Calleguas Creek, its Tributaries, and Mugu Lagoon (OC Pesticides TMDL)
- Toxicity, Chlorpyrifos, and Diazinon in the Calleguas Creek, its Tributaries and Mugu Lagoon (Toxicity TMDL)
- Metals and Selenium in Calleguas Creek, Its Tributaries, and Mugu Lagoon (Metals TMDL)
- Revolon Slough and Beardsley Wash Trash TMDL (Trash TMDL) <sup>1</sup>
- Boron, Chloride, Sulfate and TDS (Salts) in the Calleguas Creek, its Tributaries and Mugu Lagoon (Salts TMDL)

To address the monitoring requirements of the TMDLs, the Calleguas Creek Watershed TMDL Compliance Monitoring Program (CCWTMP) was established and a Quality Assurance Project Plan (QAPP) developed by the Stakeholders Implementing TMDLs in the Calleguas Creek Watershed (Stakeholders) and approved by the Los Angeles Regional Water Quality Control Board (Regional Water Board) Executive Officer. The QAPP currently addresses monitoring requirements for the Nitrogen, OC Pesticides, Toxicity, Salts, and Metals TMDLs. The Trash TMDL is addressed through a separate monitoring plan and annual monitoring report.

A monitoring approach (Salts Plan) for the Salts TMDL was submitted by the Stakeholders to the Regional Water Board in June 2009, which was conditionally approved in September 2011. Compliance monitoring for the Salts TMDL was required starting September 9, 2012.

The primary purpose of this report is to document the seventh year monitoring efforts (July 2014 to June 2015) and results of the CCWTMP for the five TMDLs included in the QAPP. The report includes summaries of the sampling events, data summaries, and a compliance assessment. The report is divided into the following sections:

- Introduction and Program Background
- Monitoring Program Structure
- Monitoring Data Summary
- Compliance Analysis and Discussion
- Revisions and Recommendations

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<sup>1</sup> Information related to the Revolon Slough and Beardsley Wash Trash TMDL is not part of this report. The Trash TMDL annual report will be submitted to the Regional Water Board on December 15, 2015.

In addition, there are several appendices included with this report and several attachments (electronic data files) associated with this report, including:

- Appendices (text documents)
  - Appendix A: Monitoring Event Summaries for Toxicity, OC Pesticides, Nutrients, Metals, and Salts TMDLs
  - Appendix B: Calibration Event Summary for Salts TMDL
  - Appendix C: Salts Rating Curves and Surrogate Relationships
  - Appendix D: Toxicity Testing and Toxicity Identification Evaluations Summary
  - Appendix E: Laboratory Quality Assurance/Quality Control Results and Discussion
- Attachments (electronic data files)
  - Attachment 1: Toxicity Data
  - Attachment 2: Monitoring Data
  - Attachment 3: Salts Mean Daily Flows: July 2014 to June 2015
  - Attachment 4: Chain-of-Custody Forms

## PROJECT ORGANIZATION

The CCWTMP is a coordinated effort where the various responsible parties identified in the TMDLs have developed a Memorandum of Agreement (MOA) that outlines an agreement to implement the CCWTMP. The responsible parties identified in the organizational structure have formally joined together to fulfill their monitoring requirements as outlined in the Basin Plan Amendments (BPAs) for the five TMDLs included in the QAPP.

The CCWTMP is intended to fulfill the monitoring requirements for only those stakeholders that are part of the MOA and/or identified by the participants of the MOA. The stakeholders to the MOA for which this report fulfills the TMDL monitoring requirements are as follows:

- **POTWs:** consisting of Camrosa Water District, Camarillo Sanitary District, Ventura County Waterworks District No. 1, and the Cities of Simi Valley and Thousand Oaks;
- **Urban Dischargers:** consisting of the Cities of Simi Valley, Thousand Oaks, Camarillo, Moorpark and Oxnard, Ventura County Watershed Protection District, and the County of Ventura Public Works Agency;
- **Agricultural Dischargers:** consisting of the entities represented by the Ventura County Agricultural Irrigated Lands Group (VCAILG) within the Calleguas Creek Watershed, a subdivision of the Farm Bureau of Ventura County; and
- **Other Dischargers:** consisting of the U.S. Department of the Navy and the California Department of Transportation (Caltrans).

Per the MOA, a Management Committee, consisting of one representative each from the POTWs, Urban Dischargers and Other Dischargers groups, and two representatives from the Agricultural Dischargers group, oversees the CCWTMP and makes decisions to assure the CCWTMP is carried out in a timely, accountable fashion.

Prior to the initiation of the first required sampling event in 2008, the Stakeholders contracted the day-to-day management of the CCWTMP activities and field sampling activities. The following contractors performed the following tasks during the sixth year monitoring effort:

- **General Project Management** - Larry Walker Associates, Inc. (LWA)
- **Field Monitoring Activities**
  - **Mugu Lagoon Water Quality Sampling** - MBC Applied Environmental Sciences (MBC)
  - **Freshwater Water Quality/Sediment Sampling** - Kinnetic Laboratories, Inc. (KLI), Fugro West, Inc. (Fugro), LWA
  - **Freshwater Fish Tissue** – Cardno ENTRIX
  - **Bird Egg Collection** – Naval Base Ventura County Environmental Staff
- **Water, Sediment, and Tissue Chemistry Analysis** - Physis Environmental Laboratories, Inc. (Physis)
- **Salts Chemistry Analysis** - Fruit Growers Laboratory, Inc. (FGL) and Physis
- **Toxicity Analysis** - Pacific Eco Risk Laboratories (PacEco)

The aforementioned contractors performed all the management activities and sampling efforts covered by this annual report. All field contractors are the same as used in last year's sampling efforts. As the monitoring program moves forward this list of contractors may continue to be amended to reflect new contractors hired on to perform required or new duties per the decision of the Stakeholders in the CCW.

## **WATERSHED BACKGROUND**

Calleguas Creek drains an area of approximately 343 square miles from the Santa Susana Pass in the east to Mugu Lagoon in the southwest. The main surface water system drains from the mountains in the northeast part of the watershed toward the southwest where it flows through the Oxnard Plain before emptying into the Pacific Ocean through Mugu Lagoon. The watershed, which is elongated along an east-west axis, is approximately thirty miles long and fourteen miles wide. The Santa Susana Mountains, South Mountain, and Oak Ridge form the northern boundary of the watershed; the southern boundary is formed by the Simi Hills and Santa Monica Mountains. Figure 1 depicts the CCW and Table 1 presents the reaches of the CCW as identified in the TMDLs covered by the CCWTMP.

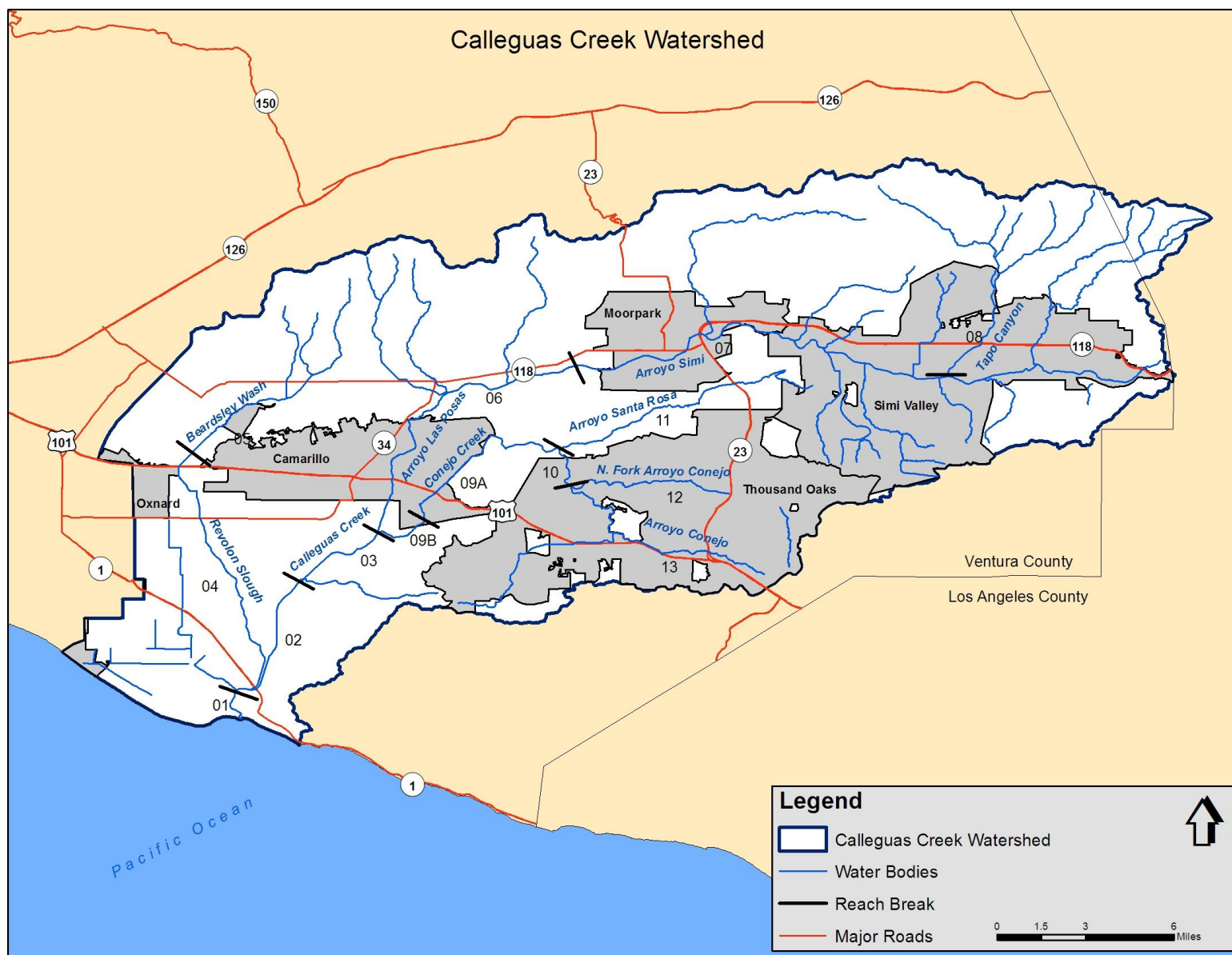


Figure 1. Calleguas Creek Watershed

**Table 1. Description of Calleguas Creek Watershed Reaches**

Reach No.	Reach Name	Subwatershed	Geographic Description
1	Mugu Lagoon	Mugu	Lagoon fed by Calleguas Creek
2	Calleguas Creek (Estuary to Potrero Rd.)	Calleguas	Downstream (south) of Potrero Rd
3	Calleguas Creek (Potrero Rd. to Conejo Creek)	Calleguas	Potrero Rd. upstream to confluence with Conejo Creek
4	Revolon Slough	Revolon	Revolon Slough from confluence with Calleguas Creek to Central Ave
5	Beardsley Channel	Revolon	Revolon Slough upstream of Central Ave.
6	Arroyo Las Posas	Las Posas	Confluence with Calleguas Creek to Hitch Road
7	Arroyo Simi	Arroyo Simi	End of Arroyo Las Posas (Hitch Rd) to headwaters in Simi Valley.
8	Tapo Canyon Creek	Arroyo Simi	Confluence w/ Arroyo Simi up Tapo Canyon to headwaters
9B <sup>1</sup>	Conejo Creek (Camrosa Diversion to Arroyo Santa Rosa)	Conejo	Extends from the confluence with Arroyo Santa Rosa downstream to the Conejo Creek Diversion.
9A <sup>1</sup>	Conejo Creek (Calleguas Creek to Camrosa Diversion)	Conejo	Extends from Conejo Creek Diversion to confluence with Calleguas Creek.
10	Hill Canyon reach of Conejo Creek	Conejo	Confluence with Arroyo Santa Rosa to confluence with N. Fork; and N. Fork to just above Hill Canyon WTP
11	Arroyo Santa Rosa	Conejo	Confluence with Conejo Creek to headwaters
12	North Fork Conejo Creek	Conejo	Confluence with Conejo Creek to headwaters
13	Arroyo Conejo (South Fork Conejo Creek)	Conejo	Confluence with N. Fork to headwaters —two channels

1. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched.

## MONITORING QUESTIONS

The purpose of the CCWTMP is to direct the monitoring activities conducted to meet the requirements of the TMDLs effective for the CCW, excluding the Trash TMDL. The goals of the CCWTMP include:

- To determine compliance with numeric targets, waste load and load allocations, and interim load reduction milestones.
- To test for sediment toxicity at sediment monitoring stations.
- To identify causes of unknown toxicity.
- To generate additional land use runoff data to better understand pollutant sources and proportional contributions from various land use types.

- To monitor the effect of implementation actions by urban, POTW, and agricultural dischargers on in-stream water, sediment, fish tissue quality, and watershed balances (salts).
- To implement the program consistent with other regulatory actions within the CCW.

In addition, the CCWTMP is intended to answer the following monitoring questions to meet the goals of the program:

- Are numeric targets and allocations met at the locations indicated in the TMDLs?
- Are conditions improving?
- What is the contribution of constituents of concern from various land use types?

## **MONITORING PROGRAM DESCRIPTION**

The CCWTMP was developed to address all necessary TMDL monitoring requirements and answer the monitoring questions mentioned previously using the following monitoring elements.

### **Required Monitoring Elements**

The following environmental monitoring elements are required by the TMDLs' BPAs and are included in the CCWTMP:

- General water and sediment quality constituents;
- Water column and sediment toxicity;
- Metals and selenium in water, sediment, fish tissue, and bird eggs;
- Organic compounds in water, sediment, and fish tissue; and,
- Nitrogen and phosphorus compounds in water.
- Continuous salt concentrations and flow (the latter only at Salts TMDL receiving water compliance sites)

Table 2 lists the constituents for which analyses are conducted. Table 2 also provides a summary of sampled constituent groups and sampling frequency. The QAPP outlines, in detail, the justification of the process design, specific methodologies (both field and analytical), and quality assurance/quality control (QA/QC) procedures.

**Table 2. Constituents and Monitoring Frequency for CCWTMP (varies by site)**

<b>Constituent</b>	<b>Frequency</b>
<b><i>Chronic Aquatic Toxicity</i></b>	Quarterly + Two wet events
<b><i>General Water Quality Constituents (GWQC)</i></b>	
Flow, pH, Temperature, Dissolved Oxygen, Conductivity, Total Suspended Solids (TSS), Hardness (at freshwater sites where metals samples are collected), and Dissolved Organic Carbon (at saltwater sites where metals samples are collected)	Quarterly based on location + Two wet events
<b><i>Nutrients</i></b>	
Ammonia Nitrogen, Nitrate Nitrogen, Nitrite Nitrogen, Organic Nitrogen, Total Kjeldahl Nitrogen (TKN), Total Phosphorus, Orthophosphate-P	Quarterly + Two wet events
<b><i>Organic Constituents In Water</i></b>	
OC Pesticides <sup>1</sup> and PCBs <sup>2</sup> , OP <sup>3</sup> , Triazine <sup>4</sup> , and Pyrethroid <sup>5</sup> Pesticides	Quarterly + Two wet events
<b><i>Metals and Selenium In Water</i> <sup>6</sup></b>	
Copper, Mercury, Nickel, Zinc, and Selenium <sup>8</sup>	Quarterly + Two wet events <sup>7</sup>
<b><i>Salts</i></b>	
Electrical Conductivity (EC) and Discharge	Receiving water: Continuous (via in-situ sensors for EC and depth) plus monthly grabs for EC and discharge for sensor calibration
Total Dissolved Solids (TDS), Sulfate, Chloride, Boron	Receiving water: Continuous (derived from EC/salt relationships) Other sites: Quarterly + Two wet events
<b><i>Chronic Sediment Toxicity</i></b>	Annually (Every three years in Lagoon)
<b><i>General Sediment Quality Constituents (GSQC)</i></b>	
Total Ammonia, Percent Moisture, Grain Size Analysis, Total Organic Carbon (TOC)	Annually (Every three years in Lagoon)
<b><i>Organic Constituents In Sediment</i></b>	
OC Pesticides <sup>1</sup> and PCBs <sup>2</sup> , OP Pesticides <sup>3</sup> , and Pyrethroids <sup>5</sup>	Annually (Every three years in Lagoon)

**Table 2. Constituents and Monitoring Frequency for CCWTMP (varies by site) - continued**

<i>Additional Constituents For Mugu Lagoon Sediment</i>	
Metals <sup>9</sup>	Every three years
<i>Tissue</i>	Annually (Every three years in Lagoon)
Percent Lipids, OC Pesticides <sup>1</sup> and PCBs <sup>10</sup> , OP Pesticides <sup>3</sup> , and Metals <sup>11</sup>	
<ol style="list-style-type: none"> <li>1. OC Pesticides considered: aldrin, alpha-BHC, beta-BHC, gamma-BHC (lindane), delta-BHC, chlordane-alpha, chlordane-gamma, 2,4'-DDD, 2,4'-DDE, 2,4'-DDT, 4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endosulfan I and II, endosulfan sulfate, endrin, endrin aldehyde, endrin ketone, and toxaphene</li> <li>2. PCBs in water and sediment considered: Aroclors identified in the CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).</li> <li>3. OP Pesticides considered: chlorpyrifos, diazinon, and malathion. Chlorpyrifos is the only OP pesticide that will be measured in tissue, as it is the only OP listed in tissue.</li> <li>4. Triazine Pesticides considered: atrazine, prometryn, and simazine. Analysis of triazines ceased during year 3 following the recommendation being included in the Revisions and Recommendations section of both the year 1 and year 2 annual reports.</li> <li>5. Pyrethroid Pesticides considered: bifenthrin, cyfluthrin, cypermethrin, deltamethrin, and permethrin</li> <li>6. Copper, mercury, nickel, selenium and zinc will be measured as dissolved and total recoverable.</li> <li>7. Per the Metals TMDL BPA requires that "In-stream water column samples will be collected monthly for analysis of general water quality constituents (GWQC) and, copper, mercury, nickel, selenium, and zinc for the first year. After the first year, the Executive Officer will review the monitoring report and revise the monitoring frequency as appropriate." Monthly monitoring will be suspended until such time as the Executive Officer has reviewed the monitoring report and considered revisions to the monitoring frequency. Until the Executive Officer has considered the frequency, metals will be collected quarterly in conjunction with the other TMDLs.</li> <li>8. Monitoring at sites in Mugu Lagoon other than at the Ronald Reagan Bridge for metals is an optional element.</li> <li>9. Includes arsenic, cadmium, copper, lead, mercury, nickel, selenium and zinc. Arsenic, lead, and cadmium are included in addition to constituents required in the Metals TMDL as they have been found in previous sediment studies conducted in Mugu Lagoon to exceed guideline values used to interpret the relationship between sediment chemistry and biological impacts.</li> <li>10. PCBs in tissue considered: individual congeners.</li> <li>11. Mercury and Selenium will be measured in fish tissue and bird eggs.</li> </ol>	

## Optional Monitoring Elements

The QAPP outlines the optional monitoring efforts, all of which are considered above and beyond what is necessary to meet the requirements of the BPAs and answer the monitoring questions.

Table 3 lists the constituents and analyses that are considered optional for the CCWTMP. Monitoring for the constituents and conducting the analyses are not BPA requirements but are important to meeting general program goals and answering program questions. Table 3 also provides a general sampling frequency for each constituent group.

**Table 3. Optional Constituents and Monitoring Frequency for CCWTMP (varies by site)**

Constituent	Frequency
<b><i>Organic Constituents in Water – Grain Size Fractions</i><sup>1</sup></b>	
OC Pesticides and PCBs, OP, Triazine <sup>2</sup> , and Pyrethroid Pesticides	One wet event annually
<b><i>Organic Constituents in Sediment – Grain Size Fractions</i><sup>1</sup></b>	
OC Pesticides and PCBs, OP, Triazine <sup>2</sup> , and Pyrethroid Pesticides	Annually (Every three years in Mugu Lagoon)
<b><i>Additional Constituents for Mugu Lagoon Sediment</i></b>	
Macrobenthic community assessment	Every three years <sup>3</sup>
Sediment Toxicity – Embryo <i>Mytilus edulis</i> or <i>Crassostrea gigas</i>	

1. Please see Table 2 for a list of individual constituents in each suite.

2. Analysis of triazines ceased during year three following the recommendation being included in the Revisions and Recommendations section of both the year one and year two annual reports.

3. Mugu Lagoon assessments were conducted during the first and fourth years of monitoring.

## Special Studies

The Nitrogen, Toxicity, OC Pesticides, Salts, and Metals TMDL Implementation Plans identify required and optional special studies to investigate a range of issues. No specific special studies results are incorporated into this annual report summary at this time as the results of all special studies conducted to date have been submitted as separate reports. Data gathered during special study specific sampling may also be utilized to further answer not only the special studies questions, but also be applied to the overall CCWTMP goals and questions identified previously in this report.

## **Monitoring Program Structure**

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As outlined previously, the CCWTMP covers a broad range of TMDL monitoring requirements, including both required and optional efforts. The overall structure of these requirements per each event can be broken down into two categories: (1) compliance monitoring and (2) investigation monitoring. Compliance monitoring sites are typically located in receiving water bodies where 303(d) listings occur, and are considered points of compliance measurements. The investigational sites are located throughout the watershed, and include monitoring of drain outfalls. The purpose of these sites is not to measure compliance, but to assist with evaluating land use-specific contributions of various constituents to the watershed.

The CCWTMP effort is also divided into two monitoring efforts: (1) dry weather monitoring and (2) wet weather storm water monitoring. The following sections describe, in detail, the basis for each monitoring effort, starting with the definitions of the compliance monitoring sites and investigation monitoring sites. Specific monitoring efforts associated with each sample site are included, including the frequency of sampling by site for both dry weather and wet weather events. The sampling frequency and the constituents monitored for at the sites covered by the CCWTMP vary. A more detailed description of each topic covered can be found in the appropriate element of the QAPP, including standard operating procedures (SOPs) for field collection and sample handling techniques, and analytical procedures and protocols including minimum detection limit (MDL) and reporting limit (RL) requirements.

### **COMPLIANCE MONITORING**

#### **Compliance Monitoring for Toxicity, OC Pesticides, Metals, Nitrogen, and Salts TMDLs**

For compliance monitoring to address the Toxicity, OC Pesticides, Metals and Nitrogen TMDLs, dry weather in-stream water column samples were collected quarterly for water column toxicity, general water quality constituents (GWQC), target organic constituents, metals, and nutrients. Target organic constituents for the OC Pesticides TMDL include the OC Pesticides and PCBs listed as a footnote in Table 2. Target organic constituents for the Toxicity TMDL include the OP and pyrethroid pesticides listed as a footnote in Table 2. Target metals for the Metals and Selenium TMDL are listed as a footnote in Table 2.

In-stream water column samples to measure compliance for the Toxicity, OC Pesticides, and Metals TMDLs are generally collected at the base of each of the subwatersheds used to assign waste load and load allocations, per the BPAs.<sup>1</sup> In-stream water column samples to measure compliance for the Nitrogen TMDL are generally collected at the base of each listed reach. Toxicity Identification Evaluations (TIEs) are conducted on toxic samples as outlined in the Toxicity Testing and TIE section of the QAPP and results of these are discussed in the Toxicity Testing and TIE Evaluations Summary section of this report.

In-stream water column grab samples for salts were also collected quarterly during dry weather and twice during wet weather at the base of each of the subwatersheds specified in the Salts

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<sup>1</sup> The QAPP includes an optional metals monitoring element to monitor additional sites in Mugu Lagoon.

TMDL.<sup>2</sup> The grab sample results are used to develop statistical relationships between salt constituents and EC. These relationships are used to convert high frequency EC-sensor data to time-series of salt concentrations. Compliance with interim dry weather salt allocations is determined using monthly mean salt concentrations for dry weather developed from the time-series of data.

Additionally, POTW effluent was monitored for compliance with the effluent limits presented in the Toxicity, OC Pesticides, Metals, and Salts TMDL BPAs. Currently, POTWs collect data required by each of their individual monitoring requirements. For additional TMDL constituents not currently sampled by the plants, CCWTMP crews perform sampling as necessary (efforts vary by plant and constituent group). All CCWTMP-required data for POTWs are compiled in this report.

All efforts are made to include two wet weather water sampling events for compliance monitoring for the OC Pesticides, Toxicity, Metals, and Salts TMDLs during targeted storm events between October and April. Two wet weather events were completed in December 2014.

Streambed sediment samples, collected annually in the freshwater portion of the watershed, were collected during the first event of this monitoring year and analyzed for sediment toxicity, general sediment quality constituents (GSQC), and target organics. Sediment samples in Mugu Lagoon are collected every three years per the approved QAPP. Sediment samples were collected during year seven and the data are presented in this report.

Similar to the sediment sampling frequency, fish tissue samples were collected in the freshwater portions of the watershed in June 2015, and will continue to be collected annually for the CCWTMP. In addition, fish tissue and mussel samples were collected in Mugu Lagoon during year seven and the data are presented in this report.

## **INVESTIGATION MONITORING**

Investigation monitoring focuses on identifying the contribution of constituents of concern from various land uses in the watershed and areas where toxicity has been observed to occur in the past that are not addressed by compliance monitoring. These sites are meant to compliment compliance monitoring efforts, fill data gaps where identified, and assist in identification of sources of constituents that may be leading to non-compliant conditions. The following describes the various types of investigation sites sampled during this reporting period.

### **Land Use Discharge Investigation**

Land use discharge samples are generally collected concurrently (on the same day when possible) with compliance monitoring at representative agricultural and urban discharge sites generally located in each of the subwatersheds and analyzed for selected GWQC, metals, and target organic constituents (constituents monitored per site varies based upon sub-watershed).

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<sup>2</sup> The goal is to sample two wet weather events per monitoring year; however, only one storm was predicted that met the thresholds for monitoring.

## Toxicity Investigation

As significant mortality had not occurred at the two sediment toxicity investigation sites during the first three years of the CCWTMP, ceasing investigation monitoring was recommended in the third year annual report. Toxicity testing at the investigation sites ceased until event 38, when it was resumed to support delisting of the identified reaches. The normal annual sampling frequency for this investigation is provided in Table 6.

Sediment toxicity investigation monitoring for delisting occurred during Event 44. Water column toxicity sampling occurred during all events. In addition, the year-seven samples were analyzed for a suite of constituents (general chemistry, general nutrients, metals, PCBs, OC pesticides, OP pesticides, and pyrethroid pesticides), particle size distribution, and total organic carbon.

## SAMPLING SITES

The QAPP details the justification and rationale for each of the sites sampled via the CCWTMP. Information on compliance monitoring sites, land use sites, and sample collection frequency is presented in Table 4 and Table 5 below. The general locations of the receiving water compliance monitoring sites (excluding Mugu Lagoon) for water, sediment, and fish tissue are presented in Figure 2 through Figure 4. The POTW effluent discharge sites are presented in Figure 5. The sampling sites in each figure are designated by sampled constituent group. The compliance monitoring sampling zones for sediment sampling and tissue sampling in Mugu Lagoon are shown in Figure 6 and Figure 7, respectively.

The non-Mugu Lagoon water and sediment toxicity investigation sampling sites coincide with current and previous sampling programs in the CCW. Water and sediment toxicity investigation sampling sites and sampling frequency are presented in Table 6, while the general locations of the water and sediment toxicity investigation sampling sites in the CCW are presented in Figure 8. Land use monitoring sites are shown in Figure 9.

The salt monitoring sites correspond with compliance sites or land use sites used for monitoring related to other TMDLs (Figure 2) with two exceptions:

1. One of the salt compliance points is only used for salt monitoring (Conejo Creek at Baron Brothers Nursery).
2. The continuous monitoring equipment (and the location of salt grab samples) for the Simi subwatershed was installed just downstream of the Tierra Rejada bridge, and is referred to as "07\_TIERRA".

The CCWTMP efforts summarized in the annual report correspond to the sites and locations listed below. As this program progresses, the number and location of sites may be revised if existing sites become inaccessible, if it is determined that alternative locations are needed, or if the number of land use stations needed to appropriately characterize discharges needs modification.

**Table 4. CCWTMP Compliance Monitoring and Nutrient Investigation Sites Annual Sampling Frequency**

Sub-Wat.	Site Id	Reach	Site Location	GPS Coordinates		Water <sup>1, 2</sup>						Sediment			Tissue <sup>3</sup>		
				Lat	Long	Tox	Pests/ PCBs	Nut	Metal	Salts	GWQC	Tox	Pests/ PCBs	Metal	Pests/ PCBs	Metal <sup>4</sup>	
Mugu Lagoon	01_RR_BR	1	Ronald Reagan St Bridge	34.1090	-119.0916	6	6	6	6	NA	6	NA	NA	NA	NA	NA	
	01_BPT_3	1	Located In Eastern Arm	General site locations are provided as each site represents a generalized sample collection zone in which a sample will be collected.		NA	NA	NA	NA	NA	NA	Once Every Three Years					
	01_BPT_6	1	Located In Eastern Part Of Western Arm			NA	NA	NA	NA	NA	NA						
	01_BPT_14	1	Located In The Central Part Of The Western Arm			NA	NA	NA	NA	NA	NA						
	01_BPT_15	1	Located Between Estuary and Mouth of Lagoon			NA	NA	NA	NA	NA	NA						
	01_SG_74	1	Located In Western Part of Central Lagoon			NA	NA	NA	NA	NA	NA						
	Central Lagoon	1	Sampled In Central Lagoon			NA	NA	NA	NA	NA	NA						Once Every Three Years
	Western Arm	1	Sampled In Western Arm Of The Lagoon			NA	NA	NA	NA	NA	NA						
Revolon Slough	04_WOOD <sup>5</sup>	4	Revolon Slough East Side Of Wood Road	34.1698	-119.0958	6	6	6	6	6	6	1	1	NA	1	1	
	05_CENTR	5	Beardsley Wash at Central Avenue	34.2300	-119.1128	NA	NA	6	NA	NA	6	NA	NA	NA	NA	NA	
Calleguas	02_PCH	2	Calleguas Creek NE Side of Hwy 1 Bridge	34.1119	-119.0818	NA	NA	4	NA	NA	4	NA	NA	NA	NA	NA	
	03_UNIV	3	Calleguas Creek At Camarillo Street	34.1795	-119.0399	6	6	6	6	6	6	1	1	NA	1	NA	
	03D_CAMR <sup>6</sup>	3	Camrosa Water Reclamation Plant	34.1679	-119.0530	4	4	4	4	4	4	NA	NA	NA	NA	NA	
	9A_HOWAR <sup>7</sup>	9B <sup>7</sup>	Conejo Creek At Howard Road Bridge	34.1931	-119.0025	NA	NA	6	NA	6	NA	NA	NA	NA	NA	NA	
	9AD_CAMA <sup>7</sup>	9B <sup>7</sup>	Camarillo Water Reclamation Plant	34.1938	-119.0017	4	4	4	4	4	4	NA	NA	NA	NA	NA	
Conejo	9B_ADOLF <sup>7</sup>	9A <sup>7</sup>	Conejo Creek At Adolfo Road	34.2137	-118.9894	6	6	6	NA	NA	6	NA	1	NA	1	NA	

Sub-Wat.	Site Id	Reach	Site Location	GPS Coordinates		Water <sup>1,2</sup>						Sediment		Tissue <sup>3</sup>		
				Lat	Long	Tox	Pests/ PCBs	Nut	Metal	Salts	GWQC	Tox	Pests/ PCBs	Metal	Pests/ PCBs	Metal <sup>4</sup>
Conejo	10_GATE	10	Conejo Creek Hill Canyon Below N Fork	34.2178	-118.9281	NA	NA	6	NA	NA	6	NA	NA	NA	NA	NA
	10D_HILL	10	Hill Canyon Wastewater Treatment Plant	34.2113	-118.9218	4	4	4	4	4	4	NA	NA	NA	NA	NA
	12_PARK	12	Conejo Creek North Fork above Hill Canyon	34.2144	-118.915	NA	NA	4	NA	NA	4	NA	NA	NA	NA	NA
	13_BELT	13	Conejo Creek S Fork Behind Belt Press Building	34.2078	-118.9194	NA	NA	4	NA	NA	4	NA	NA	NA	NA	NA
	9B_BARON <sup>7</sup>	9A <sup>7</sup>	Conejo Creek at Baron Brothers Nursery	34.2365	-118.9643	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA
Las Posas	06_SOMIS	6	Arroyo Las Posas Off Somis Road	34.2540	-118.9925	6	6	6	NA	NA	6	NA	1	NA	1	NA
	06D_MOOR <sup>6</sup>	6	Ventura County Wastewater Treatment Plant	34.2697	-118.9357	4	4	4	4	4	4	NA	NA	NA	NA	NA
Arroyo Simi	07_HITCH	7	Arroyo Simi East Of Hitch Boulevard	34.2716	-118.9234	6	6	6	NA	NA	6	NA	1	NA	1	NA
	07_TIERRA	7	Arroyo Simi downstream from Tierra Rejada Blvd.	34.2701	-118.9058	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	NA
	07_MADER	7	Arroyo Simi at Madera Ave.	34.2778	-118.7958	NA	NA	6	NA	NA	6	NA	NA	NA	NA	NA
	07D_SIMI	7	Simi Valley Water Quality Control Plant	34.2848	-118.8128	4	4	4	4	4	4	NA	NA	NA	NA	NA

NA – Not Analyzed

Tox – Samples will be analyzed for toxicity and OP and pyrethroid pesticides as listed in Table 2. Toxicity in water will not be analyzed at 01\_RR\_BR or at the POTWs.

Pests/PCBs – Samples will be analyzed for OC pesticides and PCBs as listed in Table 2. Chlorpyrifos will be analyzed in tissue at 04\_WOOD as it is on the 303(d) list for this reach.

Nut – Samples will be analyzed for Nutrients as listed in Table 2.

Metal – Samples will be analyzed for Metals as listed in Table 2.

GWQC – Samples will be analyzed for General Water Quality Constituents as listed in Table 2.

1. Sites listed for 6 sampling events per monitoring year refers to 4 quarterly dry events and the attempt to sample 2 additional wet events..

2. Grab samples for salts at compliance sites are not directly used to determine compliance with salts WQOs, but are used to develop statistical relationships between EC and salt constituents (Appendix C).

3. Tissue samples will be collected in the same location as water and sediment samples. Samples may be collected elsewhere if no fish are found at pre-established sample stations.

4. Bird egg samples will be collected and analyzed for mercury and selenium in the Mugu Lagoon subwatershed.

5. TIEs will not be performed at 04\_WOOD.

6. The Camrosa Water Reclamation Plant and the Ventura County Wastewater Treatment Plant are not currently discharging. However, these sites are included in case they must be sampled at a later date.

7. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.

**Table 5. CCWTMP Land Use Monitoring Sites and Sample Frequency**

Sub-Wat.	Site ID	Reach	Site Type <sup>1</sup>	Site Location	GPS Coordinates		Pests/ PCBs	Nutrients	Metal	Salts	GWQC
					Lat	Long					
Mugu Lagoon	01T_ODD2_DCH	1	Ag	Duck Pond/Mugu/Oxnard Drain #2 S. of Hueneme Rd	34.1395	-119.1185	6	6	6	NA	6
	04D_WOOD	4	Ag	Agricultural Drain on E. Side of Wood Rd N. of Revolon	34.1708	-119.0963	6	6	6	6	6
Revolon Slough	05D_SANT_VCPD	5	Ag	Santa Clara Drain at VCWPD Gage 781 prior to confluence with Beardsley Channel	34.2426	-119.1137	6	6	6	NA	6
	04D_VENTURA	4	Urban	Camarilo Hills Drain at Ventura Blvd and Las Posas Rd at VCWPD Gage 835	34.2162	-119.0685	6	NA	6	6	6
Calleguas	02D_BROOM	2	Ag	Discharge to Calleguas Creek at Broome Ranch Rd.	34.1433	-119.0713	6	6	6	NA	6
	9BD_GERRY <sup>2</sup>	9A <sup>2</sup>	Ag	Drainage ditch crossing Santa Rosa Rd at Gerry Rd	34.2358	-118.9446	6	6	6	6	6
Conejo	9BD_ADOLF <sup>2</sup>	9A <sup>2</sup>	Urban	Urban storm drain passing under N. side of Adolfo Rd approximately 300 meters from Reach 9B	34.2148	-118.9951	6	NA	6	6	6
	13_SB_HILL	13	Urban	South Branch Arroyo Conejo on S. Side of W Hillcrest	34.1849	-118.9075	6	NA	NA	6	6
Las Posas	06T_FC_BR	6	Ag	Fox Canyon at Bradley Rd - just north of Hwy 118	34.2646	-119.0111	6	6	NA	NA	6
Arroyo Simi	07D_HITCH_LEVEE_2	7	Ag	2 <sup>nd</sup> corrugated pipe discharging on north side of Arroyo Simi flood control levee off of Hitch Blvd just beyond 1 <sup>st</sup> power pole.	34.2716	-118.9219	6	6	NA	6	6
	07D_CTP	7	Urban	Flood control channel in Country Trail Park	34.2646	-118.9075	6	NA	NA	6	6
	07T_DC_H	7	Urban	Dry Canyon at Heywood Street	34.2683	-118.7600	6	NA	NA	NA	6

Ag = Agricultural Land Use Site      Urban = Urban Land Use Site      NA – Not Analyzed

1. Specific constituents analyzed under each category are listed in Table 2.

2. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.

**Table 6. Toxicity Investigation Monitoring Sites and Sampling Frequency**

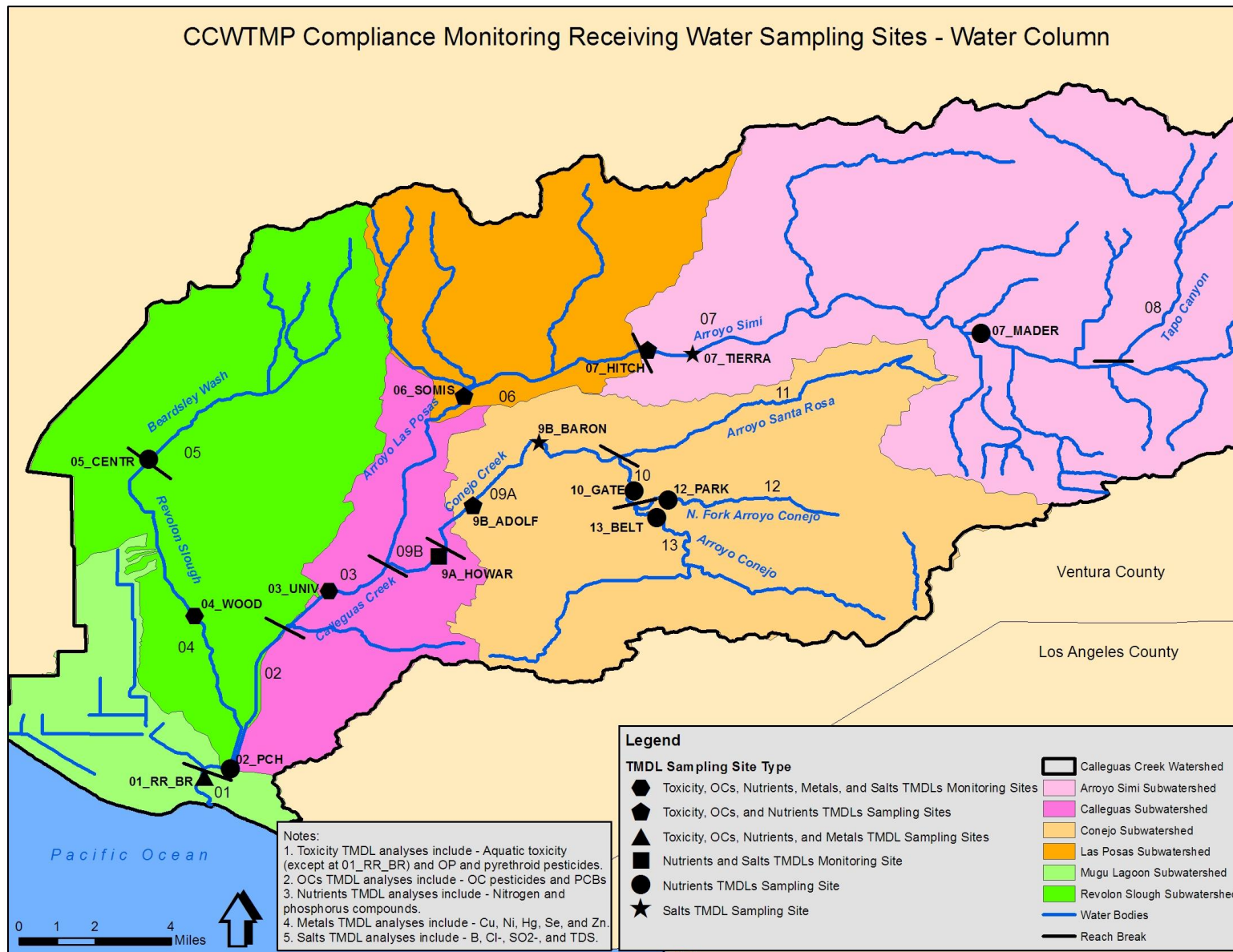
Subwatershed	Site ID	Reach	Site Location	GPS Coordinates		Tox	Pests/PCBs	GWQC
				Lat	Long			
Sediment Toxicity Investigation <sup>1</sup>								
Calleguas	02_PCH	2	Calleguas Creek Northeast Side Of Highway 1 Bridge	34.1119	-119.0818	1	1	1
	9A_HOWAR <sup>2</sup>	9B <sup>2</sup>	Conejo Creek At Howard Road Bridge	34.1931	-119.0025	1	1	1
Water Toxicity Investigation <sup>1, 3</sup>								
Conejo	10_GATE	10	Conejo Creek Hill Canyon Below North Fork Of Conejo Creek	34.2178	-118.9281	5	5	5
	13_BELT	13	Conejo Creek South Fork Behind Hill Canyon Belt Press Building	34.2078	-118.9194	4	4	4

Tox – Samples will be analyzed for toxicity, OP, and pyrethroid pesticides in water and toxicity, OP, and pyrethroid pesticides in sediment as listed in Table 2.

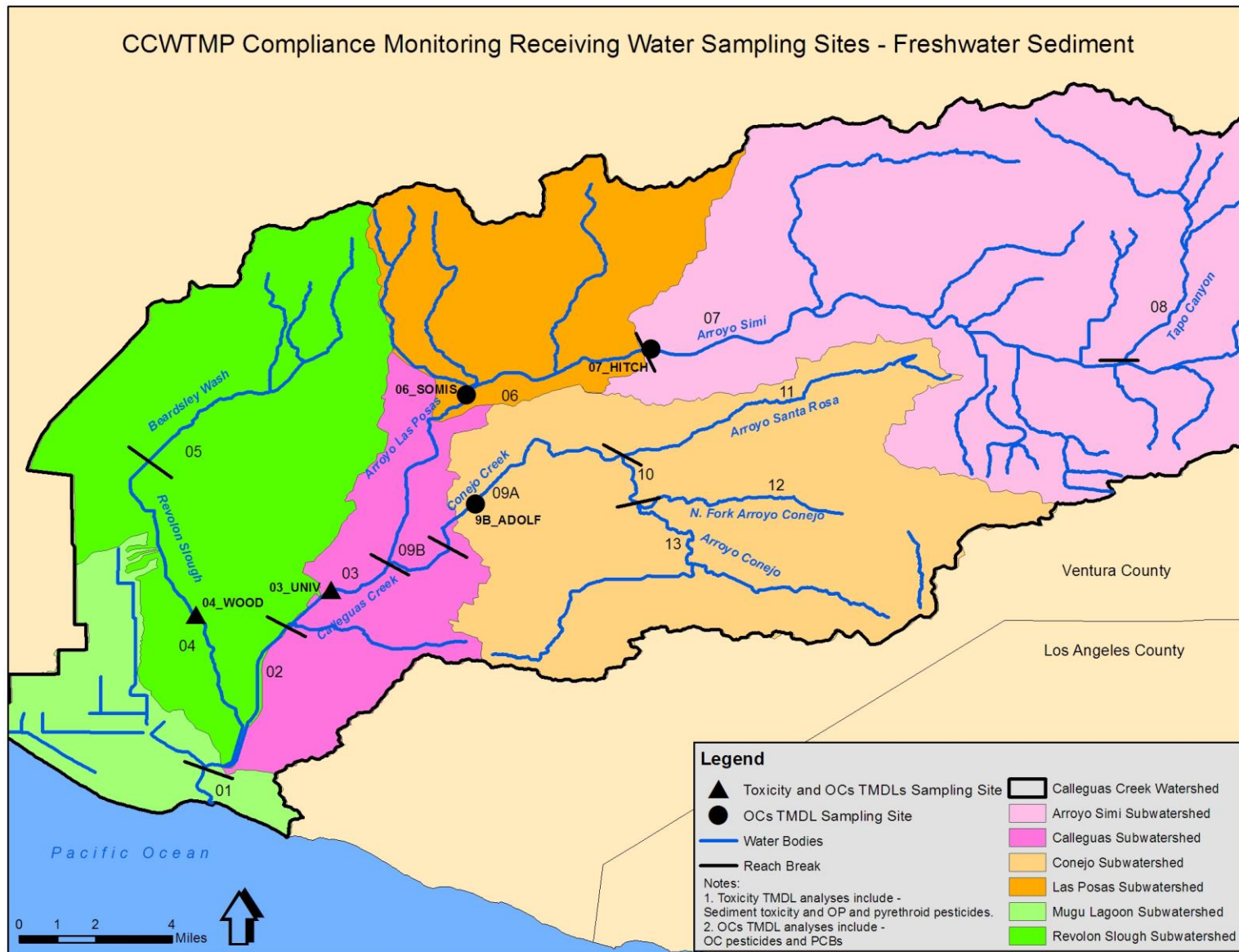
Pests/PCBs – Samples will be analyzed for OC pesticides and PCBs as listed in Table 2.

GWQC – Samples will be analyzed for General Water Quality Constituents as listed in Table 2.

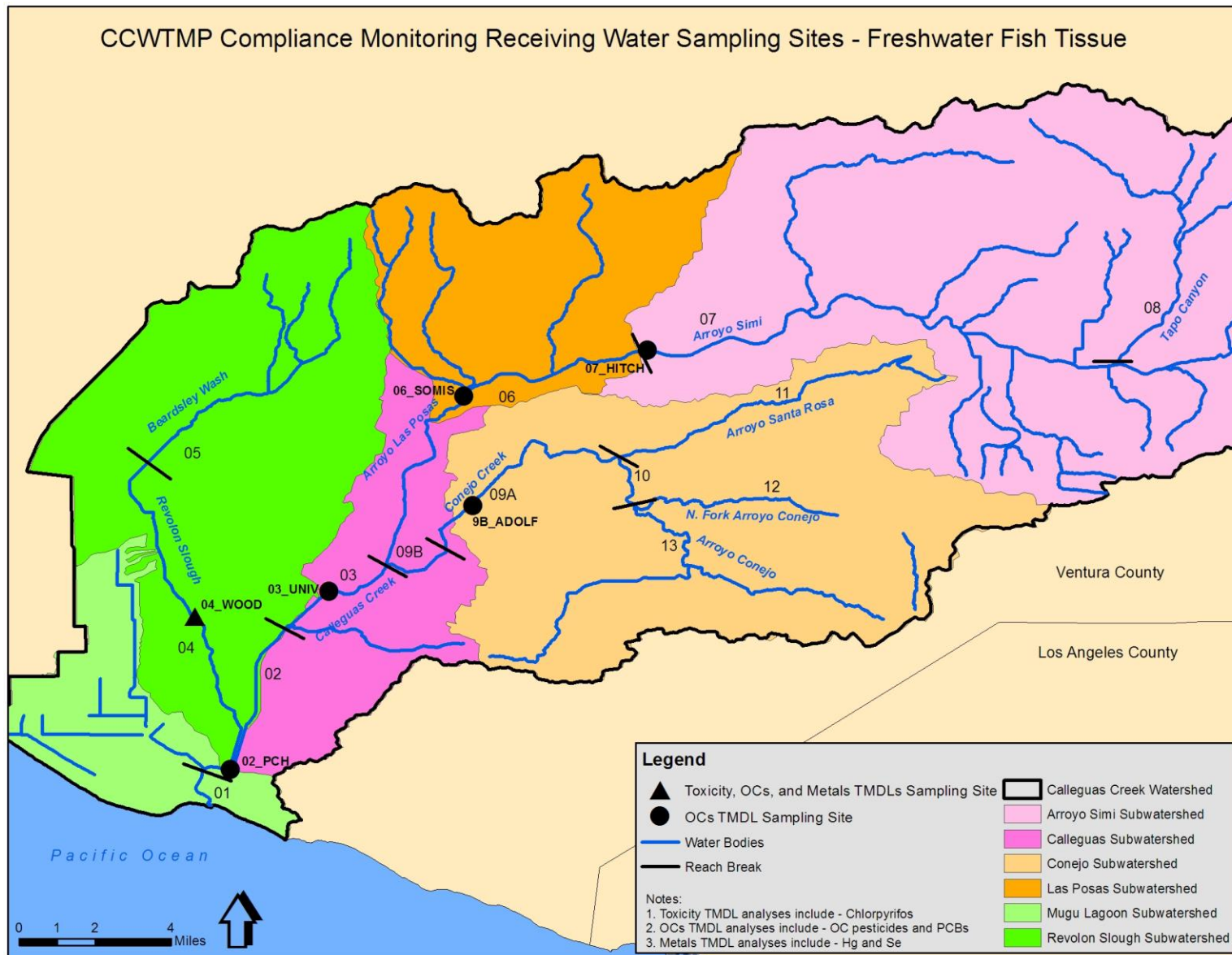
1. This table depicts the normal toxicity investigation sampling frequency. During year 5, this investigation was put on hold and then re-started as described in text.
2. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.
3. Includes two wet events per site; except during years when there is insufficient rainfall to trigger sampling.



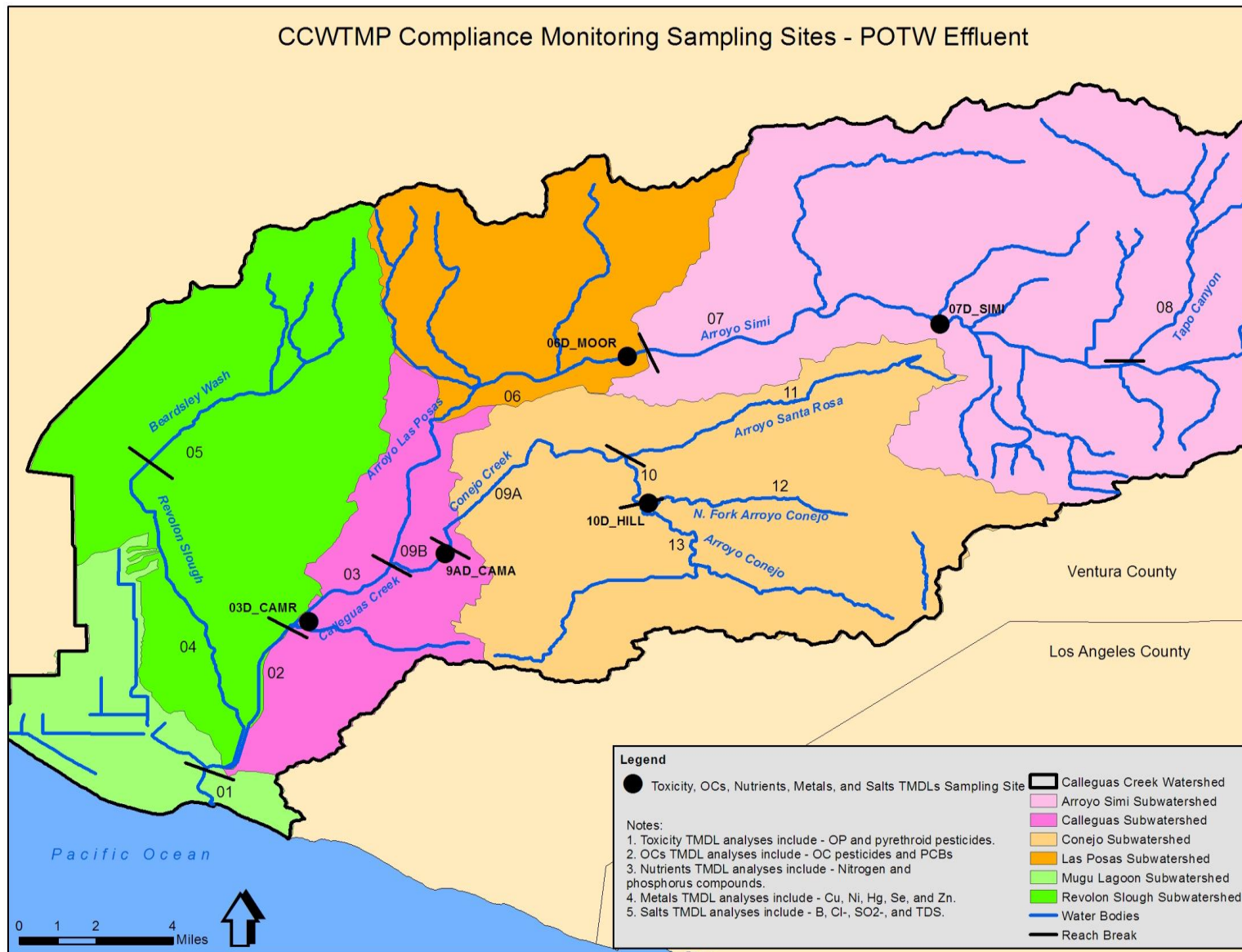
**Figure 2. CCWTMP Compliance Monitoring Sampling Sites – Receiving Water**



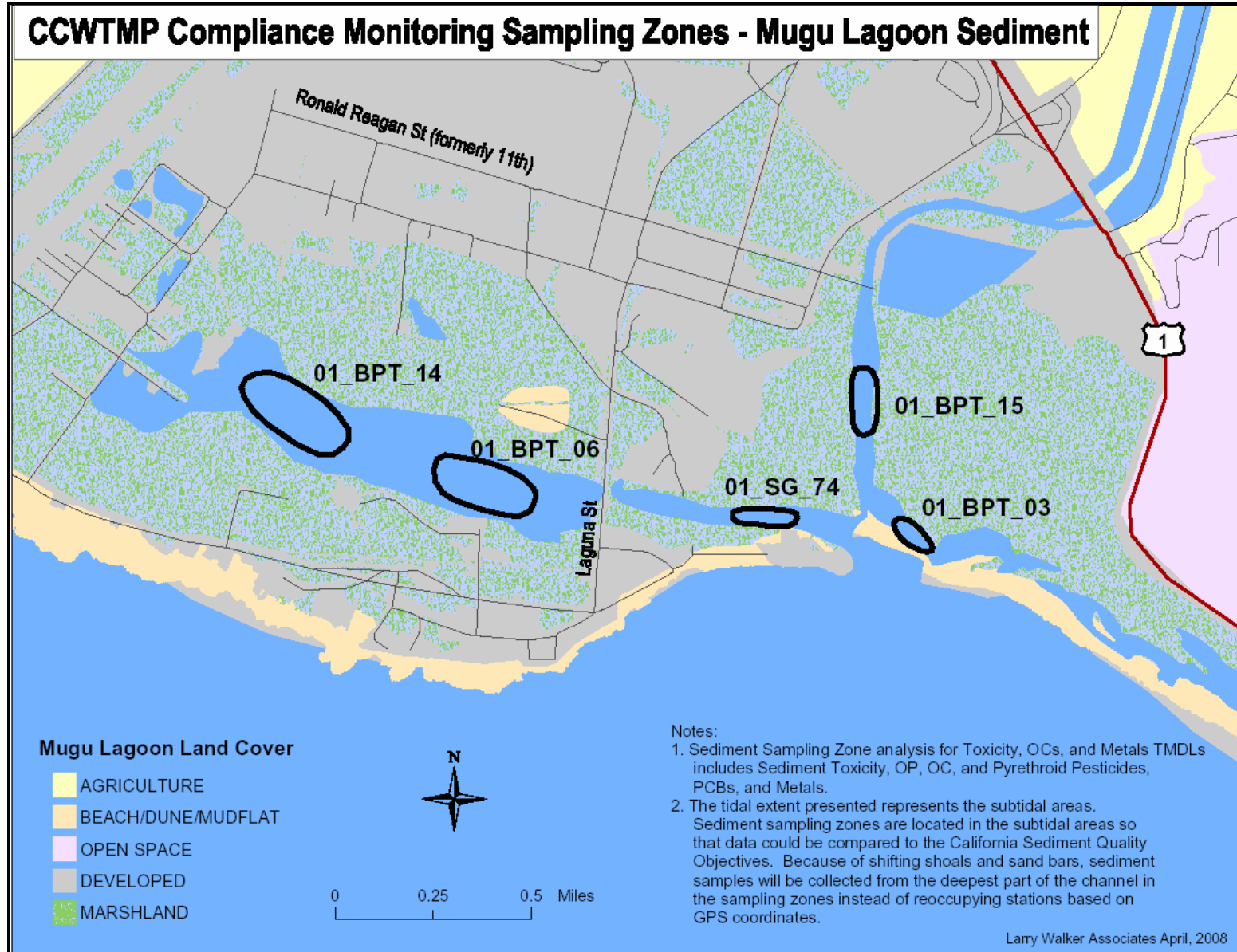
**Figure 3. CCWTMP Compliance Monitoring Receiving Water Sampling Sites – Freshwater Sediment**



**Figure 4. CCWTMP Compliance Monitoring Sampling Sites – Freshwater Fish Tissue**



**Figure 5. CCWTMP Compliance Monitoring Sampling Sites – POTW Effluent**



**Figure 6. CCWTMP Compliance Monitoring Sampling Zones – Mugu Lagoon Sediment**

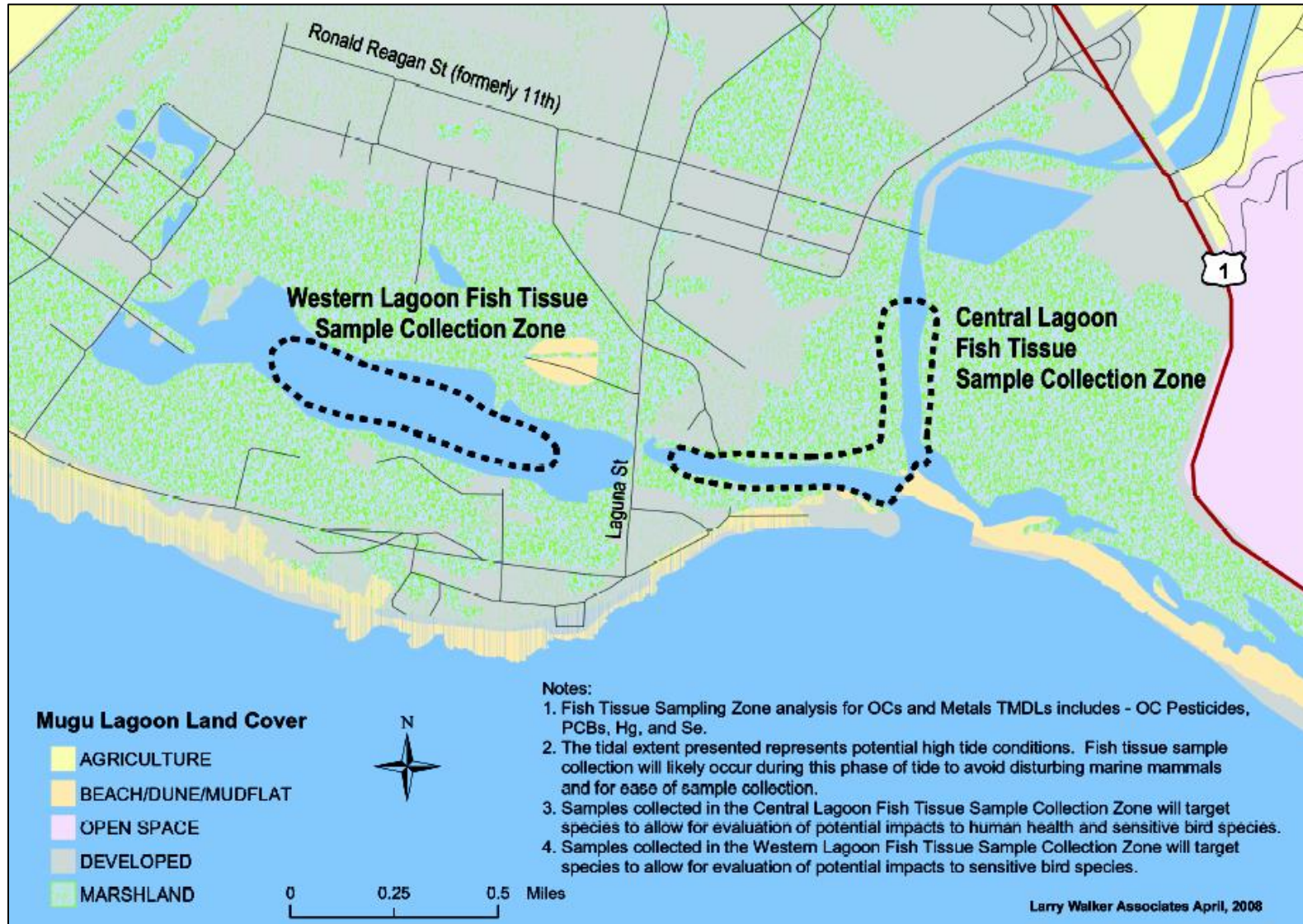
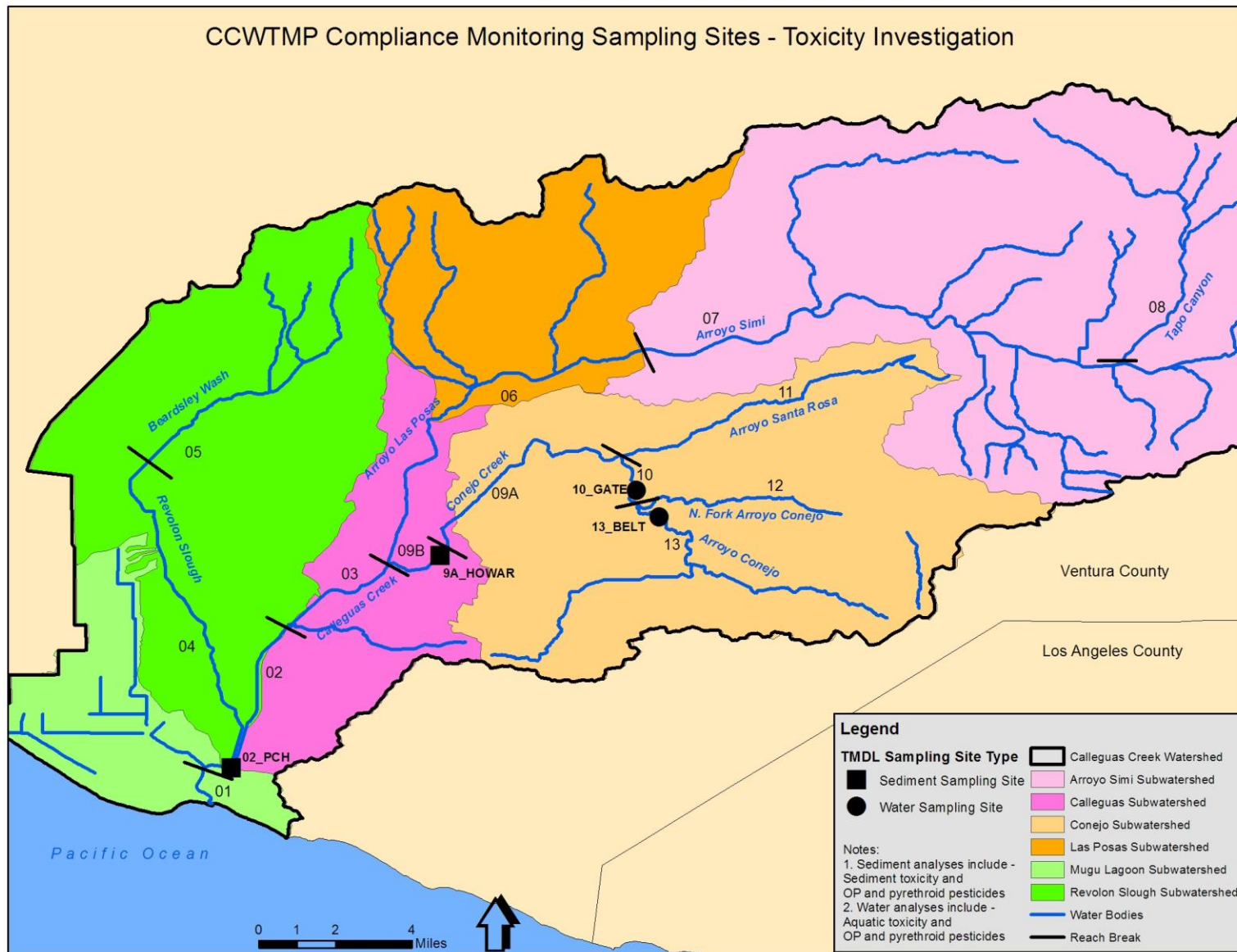
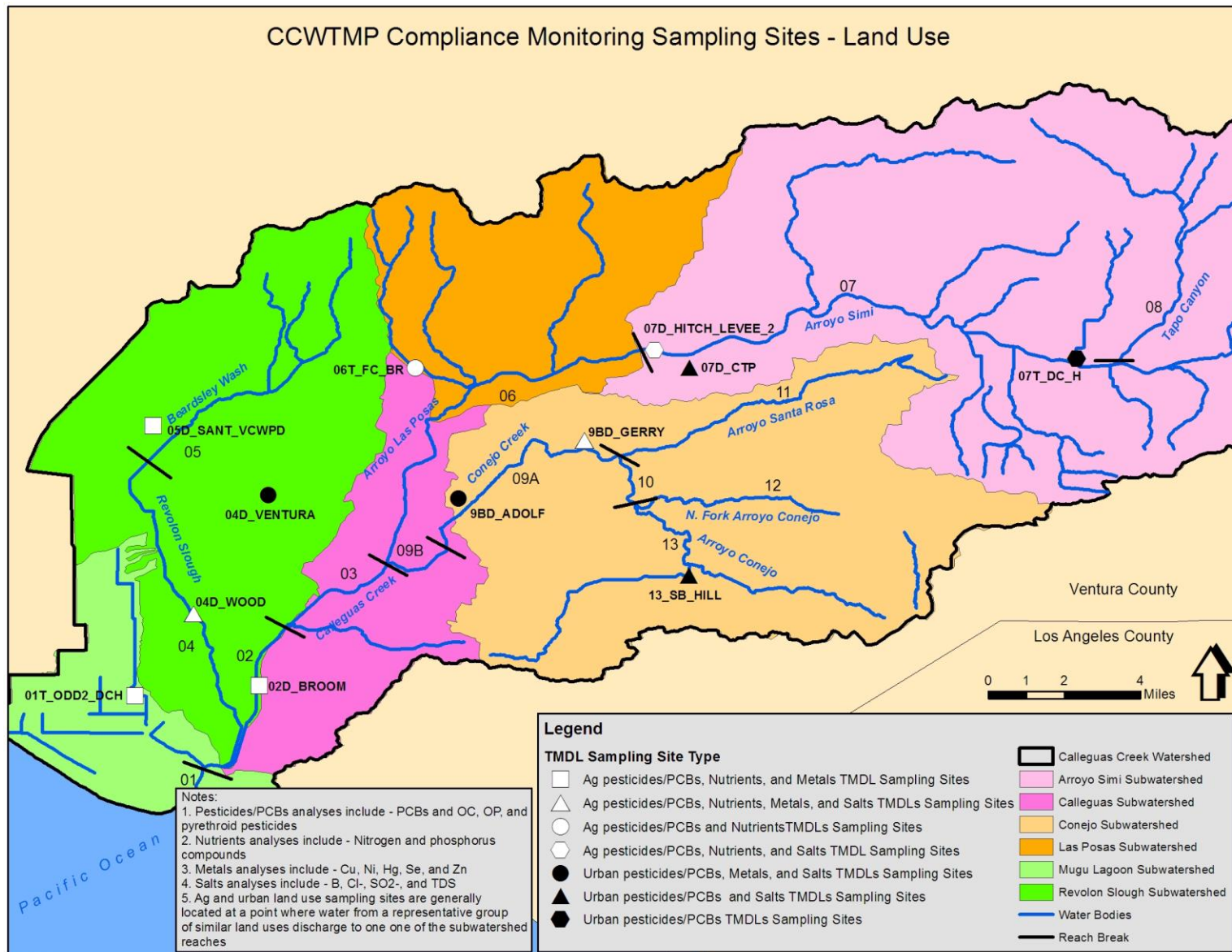


Figure 7. CCWTMP Compliance Monitoring Sampling Zones – Mugu Lagoon Tissue



**Figure 8. CCWTMP Toxicity Investigation Receiving Water Sampling Sites – Water and Sediment**



**Figure 9. CCWTMP Land Use Sampling Sites**

## Monitoring Data Summary

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To summarize the CCW TMDL monitoring data, box plots have been created for site and constituent combinations representing the data gathered over the entire monitoring program. The data presented includes all constituents with TMDL limits for water or sediment at the sites where the constituents were analyzed. Where TMDL limits are effective, those thresholds have been identified for the sites where they apply. As appropriate, data for constituents with specific dry or wet weather limits are presented separately. Data collected during year seven, which is the reporting period for this document, have been overlain on the box plots as circles. The box plots include all of the data collected during this program. This was done to allow for easy comparison between recent data and what have been collected overall. The seventh year data are presented in tabular form below each box plot. Each figure of box plots presents data from either receiving water sites or land use sites. The receiving water sites are color coded by subwatershed as shown in Table 7. Land use and POTW sites are displayed together and grouped by type as presented in Table 8.

Fish tissue data are not displayed as box plots. Fish tissue data are presented in tables due to the small number of samples and to preserve the species information associated with each sample.

Toxicity data and TIE results are summarized in Appendix D. Summaries of the 2014-15 monitoring events are included as Appendix A.

Some TMDL constituents were never, or rarely detected (less than 2 percent detection rate) and therefore, did not warrant a data summary. The constituents, which were never detected, include:

**In Water:**

- Endosulfan II
- Endrin

**In Sediment:**

- Endrin
- BHC, gamma

Rarely detected constituents in water are as follows:

- Aldrin (four detects, none this year)
- Dieldrin (six detects, three this year)
- Endosulfan I (three detects, none this year)
- BHC, gamma (three detects, none this year)
- Total PCBs (five detects, three this year)

Rarely detected constituents in sediment are as follows:

- Dieldrin (one detect, none this year)

**Table 7. Receiving Water Sites Color Coded by Subwatershed**

Subwatershed	Reach	Site ID
Mugu Lagoon	Reach 1	01_BPT_14
		01_BPT_15
		01_BPT_3
		01_BPT_6
		01_RR_BR
		01_SG_74
Calleguas	Reach 2	02_PCH
	Reach 3	03_UNIV
	Reach 9B <sup>1</sup>	09A_HOWAR
Revolon Slough	Reach 4	04_WOOD
	Reach 5	05_CENTR
Las Posas	Reach 6	06_SOMIS
Arroyo Simi	Reach 7	07_HITCH
		07_MADER
		07-TIERRA
Conejo	Reach 9A <sup>1</sup>	09B_ADOLF
	Reach 9A <sup>1</sup>	09B_BARON
	Reach 10	10_GATE
	Reach 12	12_PARK
	Reach 13	13_BELT

1. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.

**Table 8. Land Use and POTW Sites Color Coded by Type**

<b>Urban Land Use (MS4) Sites:</b>	
Reach 4	04D_VENTURA
Reach 7	07D_CTP
Reach 7	07T_DC_H
Reach 9A <sup>1</sup>	09BD_ADOLF <sup>1</sup>
Reach 13	13_SB_HILL

<b>Ag Land Use Sites:</b>	
Reach 1	01T_ODD2_DCH
Reach 2	02D_BROOM
Reach 4	04D_WOOD
Reach 5	05D_SANT_VCWPD
Reach 6	06T_FC_BR
Reach 7	07D_HITCH_LEVEE_2
Reach 9A <sup>1</sup>	09BD_GERRY <sup>1</sup>

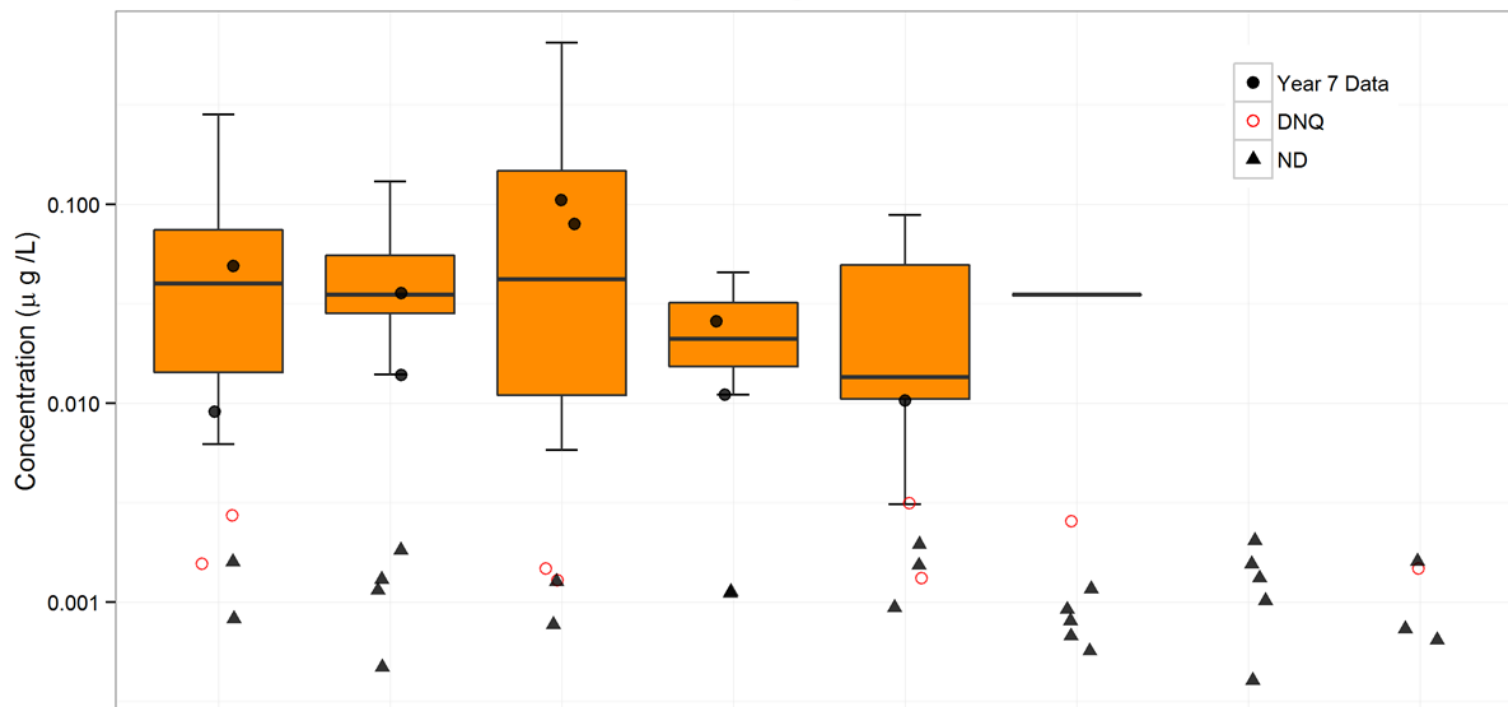
<b>POTW Sites:</b>	
Reach 7	07D_SIMI
Reach 9B <sup>1</sup>	09AD_CAMA <sup>1</sup>
Reach 10	10D_HILL

1. In the 2012 updates to the Los Angeles Region Basin Plan, the reach designations for 9A and 9B were switched. For consistency with the TMDLs and historic site naming conventions, the site names in the annual monitoring reports maintain the original reach designations.

## OC PESTICIDES TMDL DATA SUMMARY

The following figures present OC pesticides data in both water and sediment. Presently, only the POTWs have effective final limits in water, but data for all sites is provided since the TMDL specifies final targets for OC pesticides in water. Effective interim allocations for agriculture and waste load allocations for urban dischargers are provided in the appropriate OC pesticides in sediment figures. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was detected but not quantifiable (DNQ). Values in the tables within each figure with a “<” preceding it, indicate the constituent was not detected (ND) at MDL for that constituent.

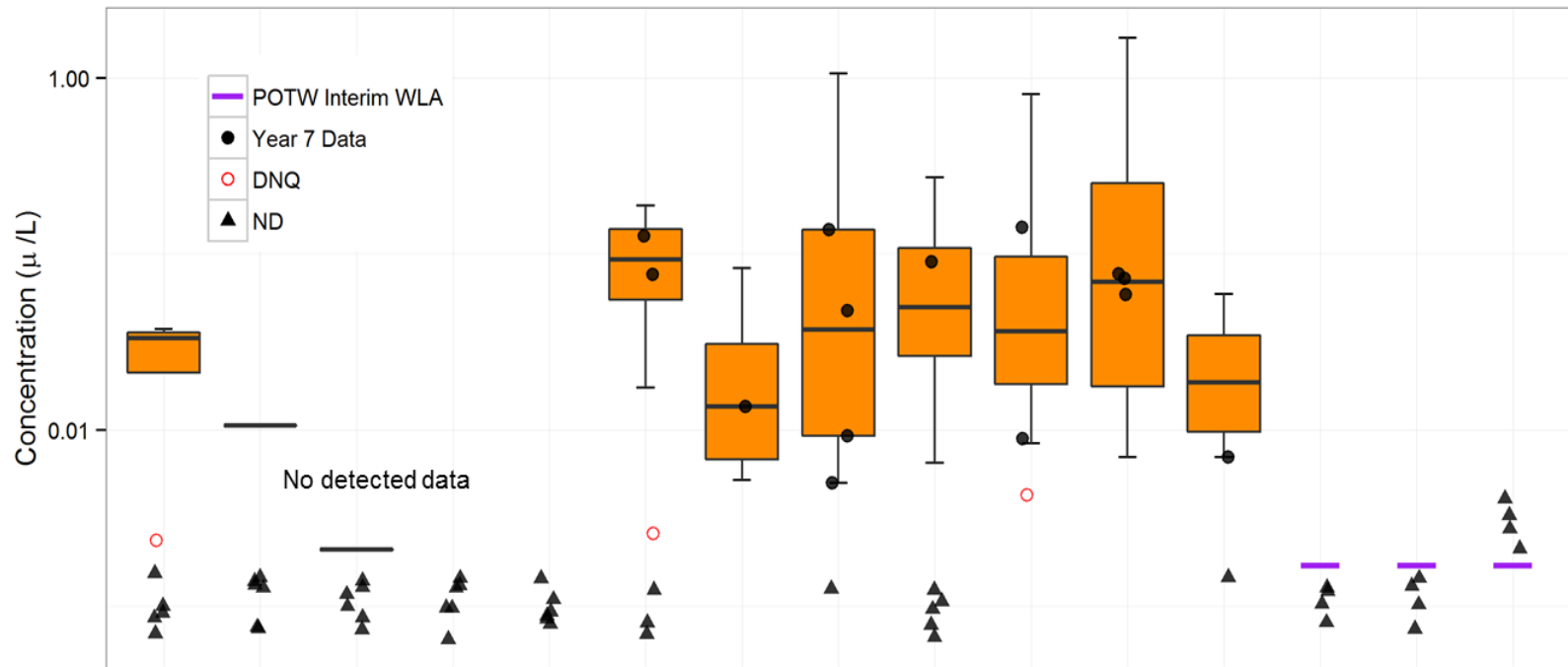
4,4'-DDD in Receiving Water Sites: 2008-2015



Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-14	Dry	44	0.0016	<0.001	0.0013	–	0.0013	<0.001	<0.001	<0.001
Nov-14	Dry	45	0.0027	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	–
Dec-14	Storm	46	0.0092	0.0139	0.1058	0.0259	0.0105	<0.001	<0.001	<0.001
Dec-14	Storm	47	0.0488	0.0351	0.0785	0.011	0.0031	0.0025	<0.001	0.0015
Feb-15	Dry	48	<0.001	<0.001	0.0015	<0.001	<0.001	<0.001	–	<0.001
May-15	Dry	49	<0.001	<0.001	<0.001	–	<0.001	<0.001	<0.001	–

Figure 10. 4,4'-DDD Water Column Concentrations in Receiving Water Sites: 2008-2015

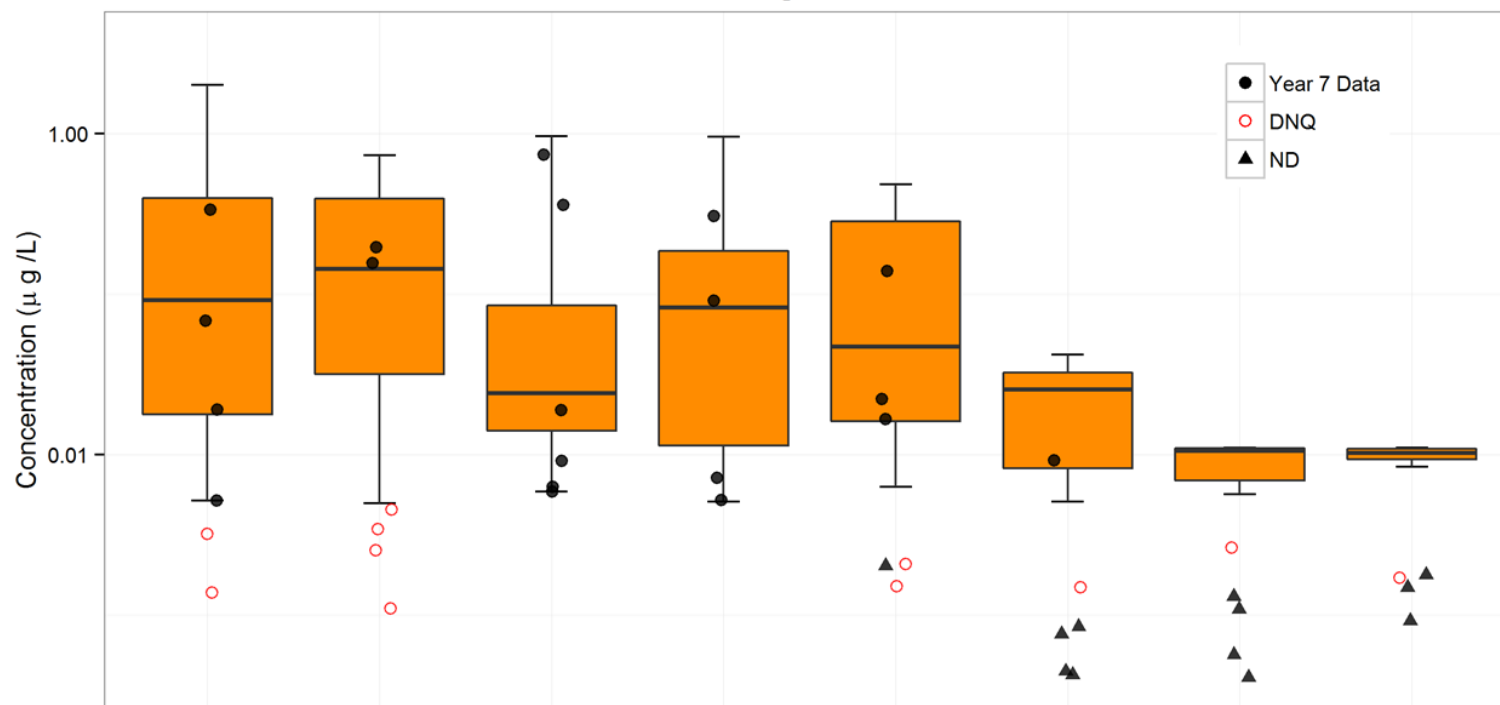
**4-4'-DDD in Water from Urban, Ag, & POTW Sites: 2008-2015**



Date	Type	Event	04D_VENTURA	07D_CTP	07T_DC_H	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCMPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-14	Dry	44	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	--	<0.001	--	0.0772	--	<0.001	<0.001	<0.003
Nov-14	Dry	45	<0.001	<0.001	<0.001	<0.001	<0.001	0.0026	--	<0.001	<0.001	--	--	--	<0.001	<0.001	<0.003
Dec-14	Storm	46	<0.001	<0.001	<0.001	<0.001	<0.001	0.0766	--	0.0479	<0.001	0.141	0.0587	<0.001	--	--	--
Dec-14	Storm	47	0.0024	<0.001	<0.001	<0.001	<0.001	0.127	0.0136	0.1375	0.0899	0.0089	0.0726	0.007	--	--	--
Feb-15	Dry	48	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	0.005	<0.001	0.0043	--	--	<0.001	<0.001	<0.003
May-15	Dry	49	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	--	0.0093	<0.001	--	--	--	<0.001	<0.001	<0.003

**Figure 11. 4,4'-DDD Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2015**

4,4'-DDE in Receiving Water Sites: 2008-2015



Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Aug-14	Dry	44	0.0052	<0.0011	0.0059	--	0.0167	<0.0015	<0.001	<0.001
Nov-14	Dry	45	0.0191	0.0045	0.0189	0.0072	0.0021	<0.001	<0.001	--
Dec-14	Storm	46	0.0682	0.1555	0.7411	0.306	0.139	<0.001	<0.001	<0.001
Dec-14	Storm	47	0.3358	0.1951	0.3585	0.0908	0.0221	0.0092	0.0027	<0.0017
Feb-15	Dry	48	<0.0014	0.0025	0.0092	0.0052	<0.0015	<0.001	--	<0.001
May-15	Dry	49	0.0032	0.0034	0.0063	--	<0.001	<0.001	<0.001	--

Figure 12. 4,4'-DDE Water Column Concentrations in Receiving Water Sites: 2008-2015

### 4,4'-DDE in Water from Urban, Ag, & POTW Sites: 2008-2015

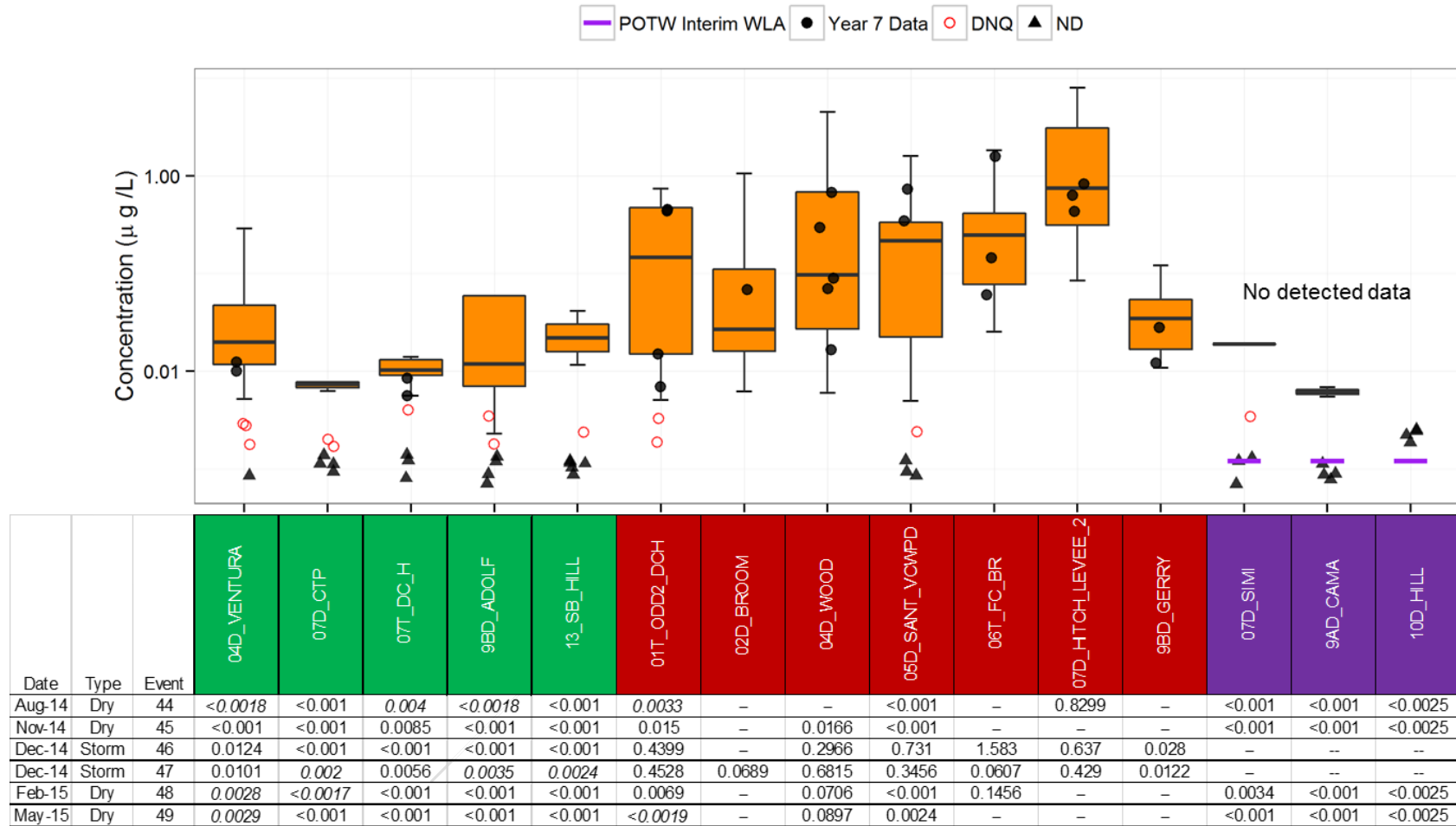


Figure 13. 4,4'-DDE Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2015

### 4-4'-DDT in Receiving Water Sites: 2008-2015

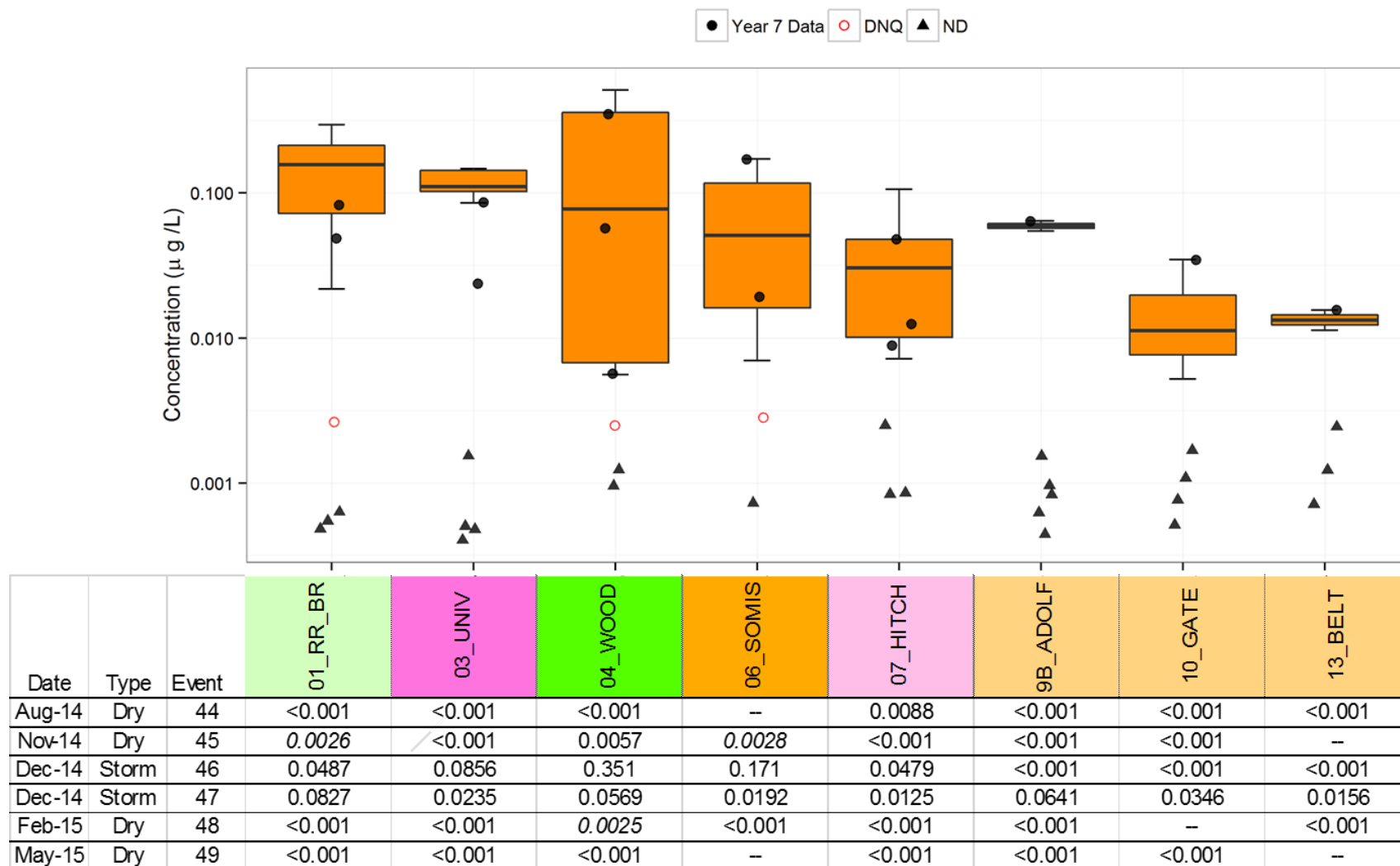


Figure 14. 4,4'-DDT Water Column Concentrations in Receiving Water Sites: 2008-2015

### 4,4'-DDT in Water from Urban, Ag, & POTW Sites: 2008-2015

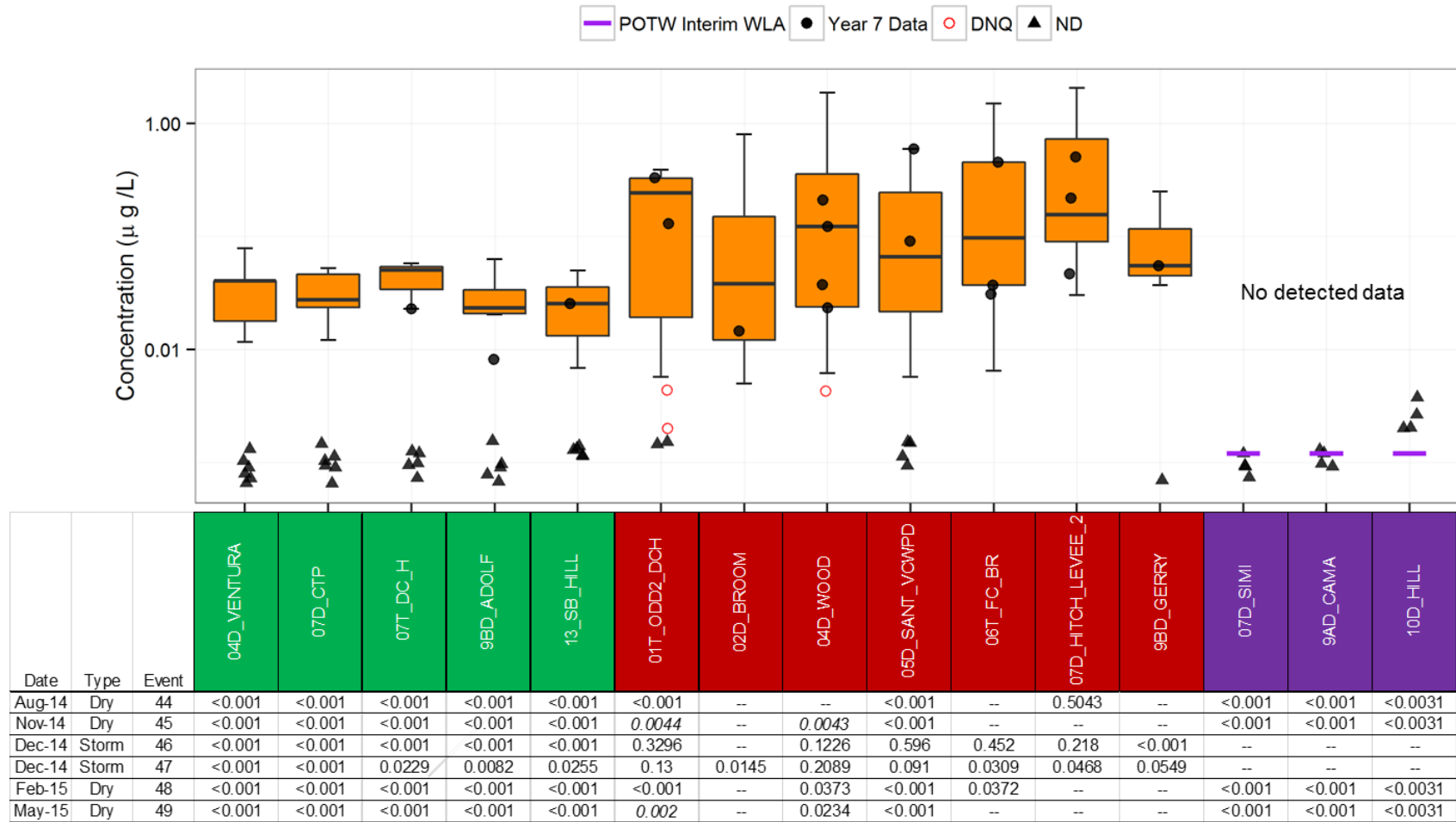


Figure 15. 4,4'-DDT Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2015

### Total Chlordane in Receiving Water Sites: 2008-2015

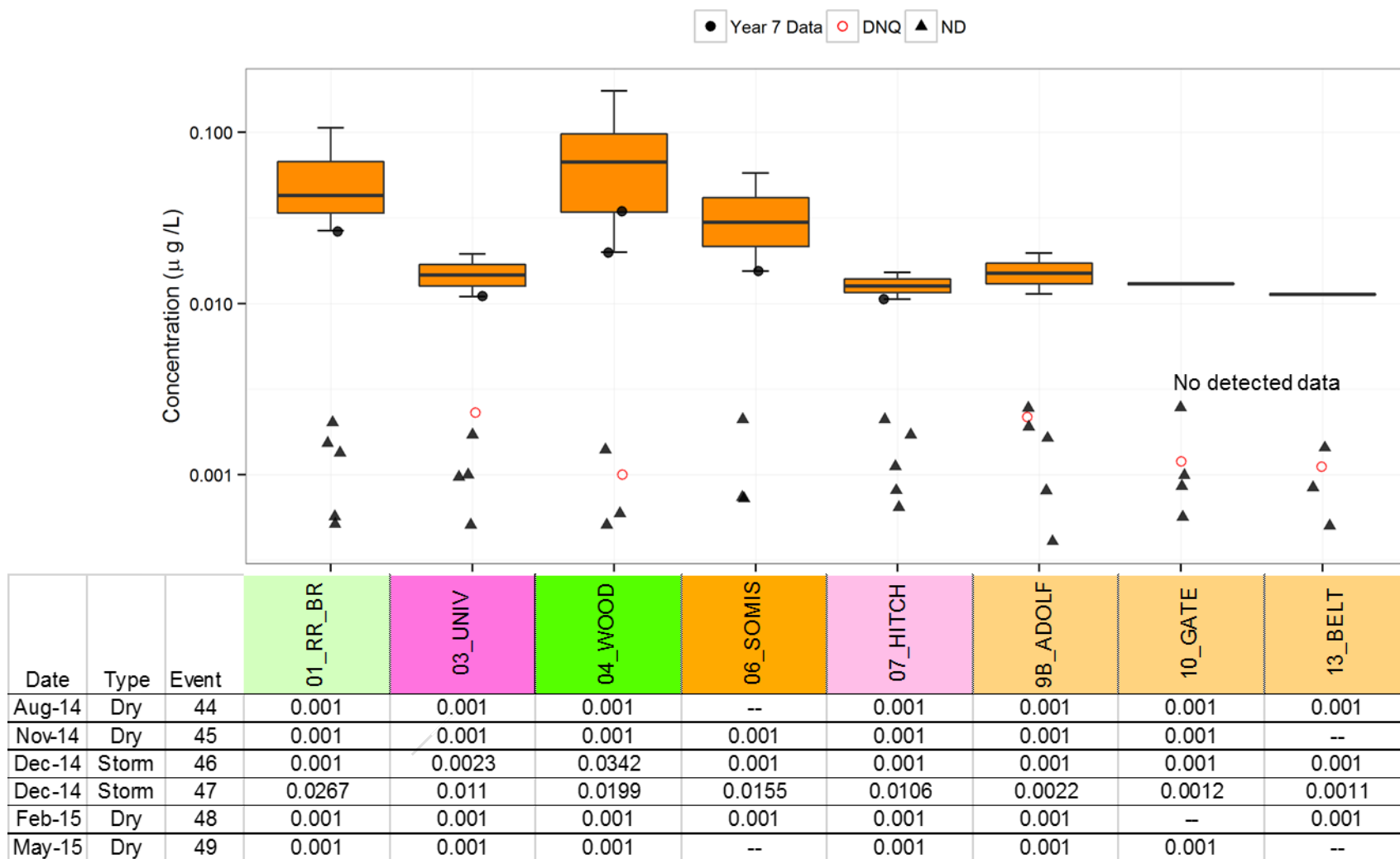


Figure 16. Total Chlordane Water Column Concentrations in Receiving Water Sites: 2008-2015

## Total Chlordane in Water from Urban, Ag, & POTW Sites: 2008-2015

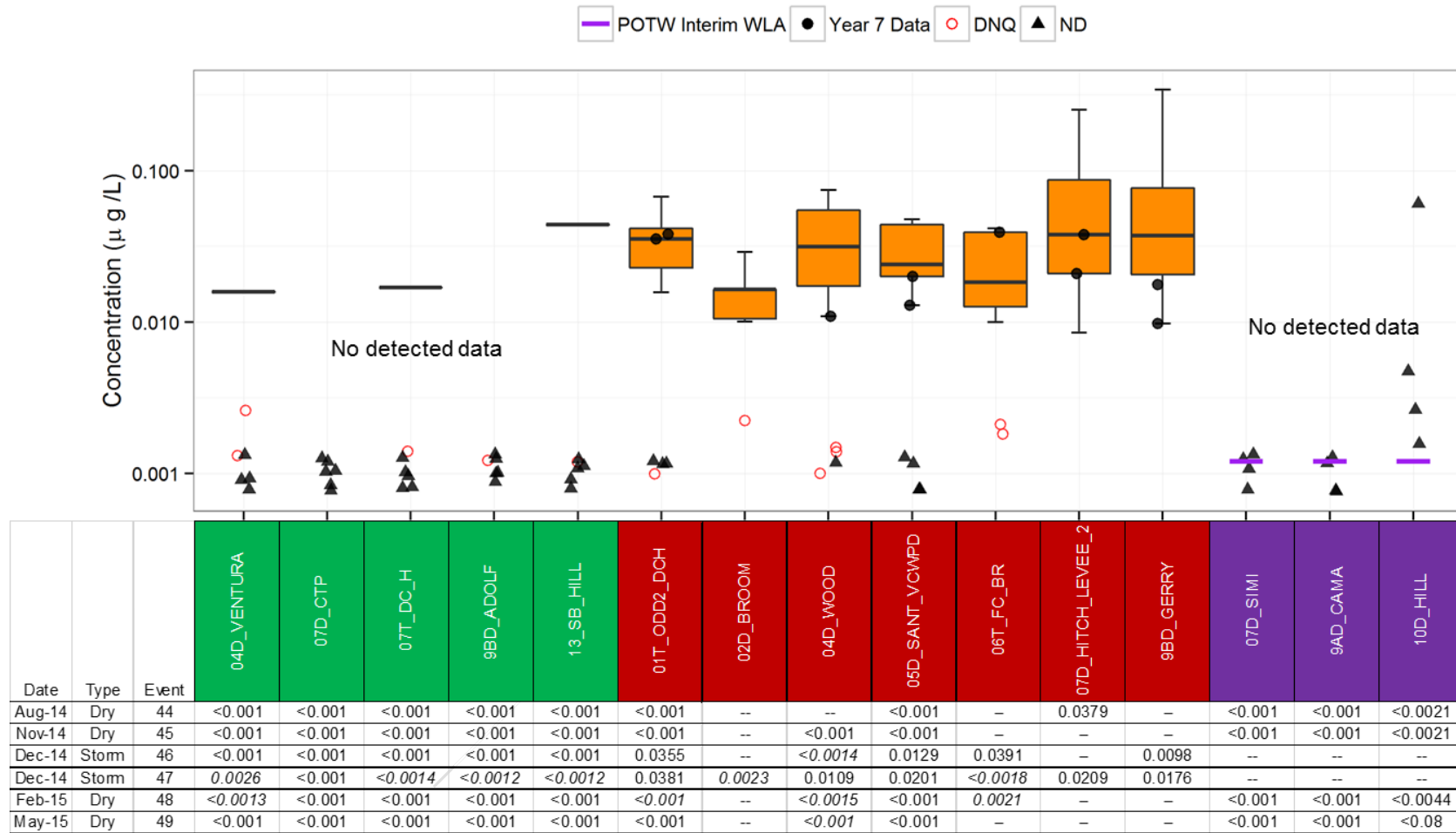
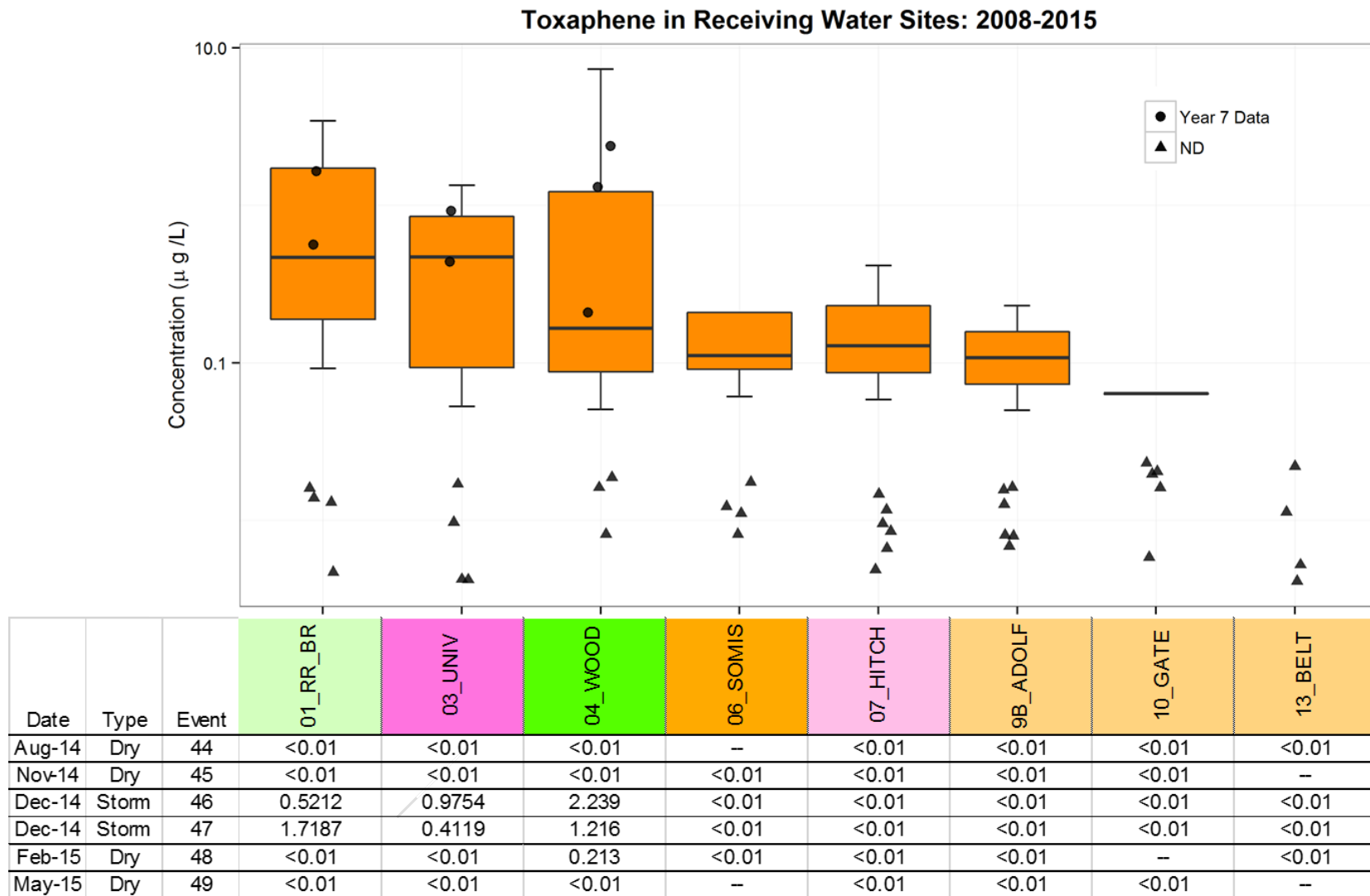
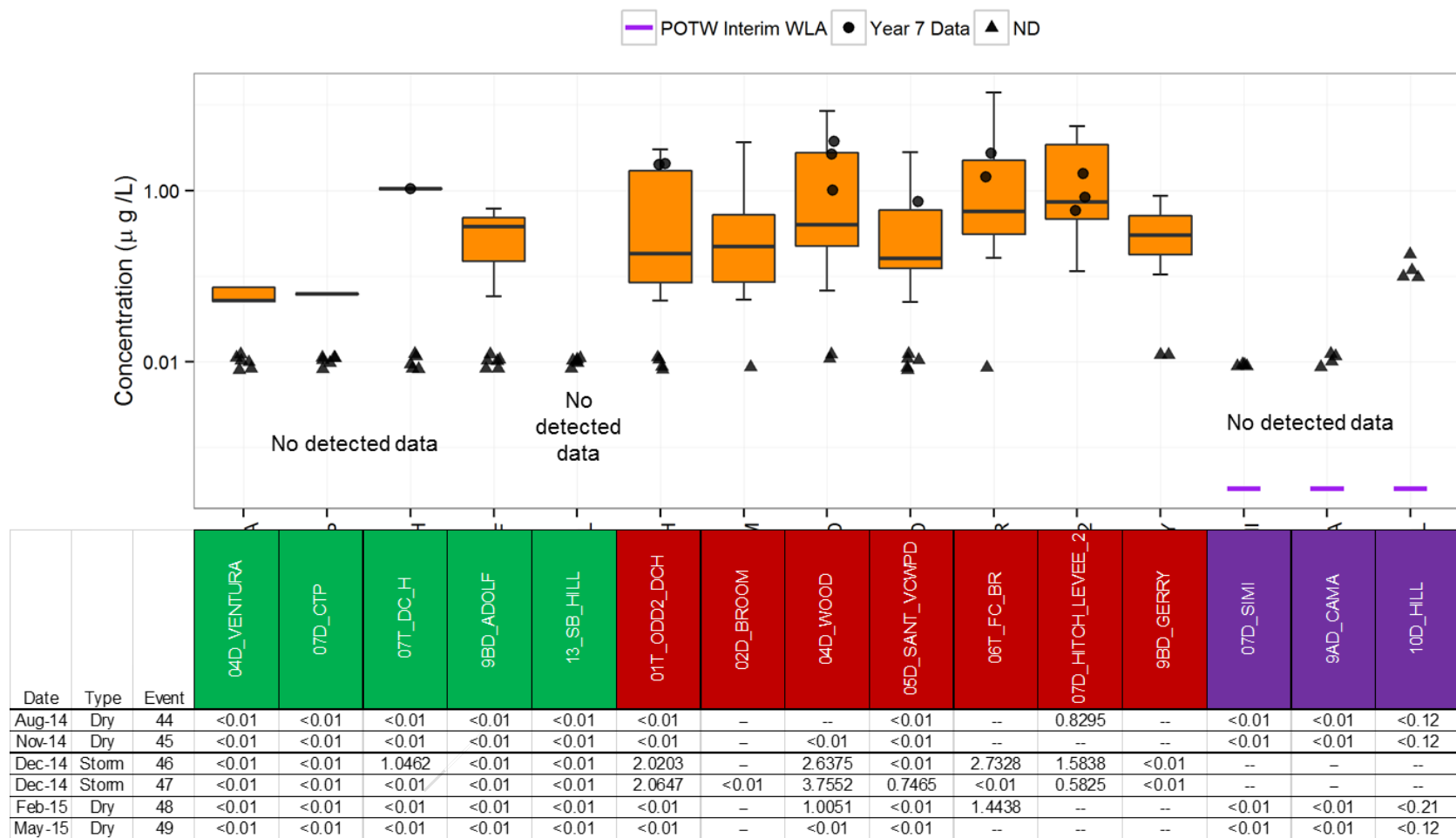


Figure 17. Total Chlordane Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2015



**Figure 18. Toxaphene Water Column Concentrations in Receiving Water Sites: 2008-2015**

## Toxaphene in Water from Urban, Ag, & POTW Sites: 2008-2015



**Figure 19. Toxaphene Water Column Concentrations in Urban, Ag, and POTW Sites: 2008-2015**

### 4,4'-DDD in Sediment Sites: 2008-2015

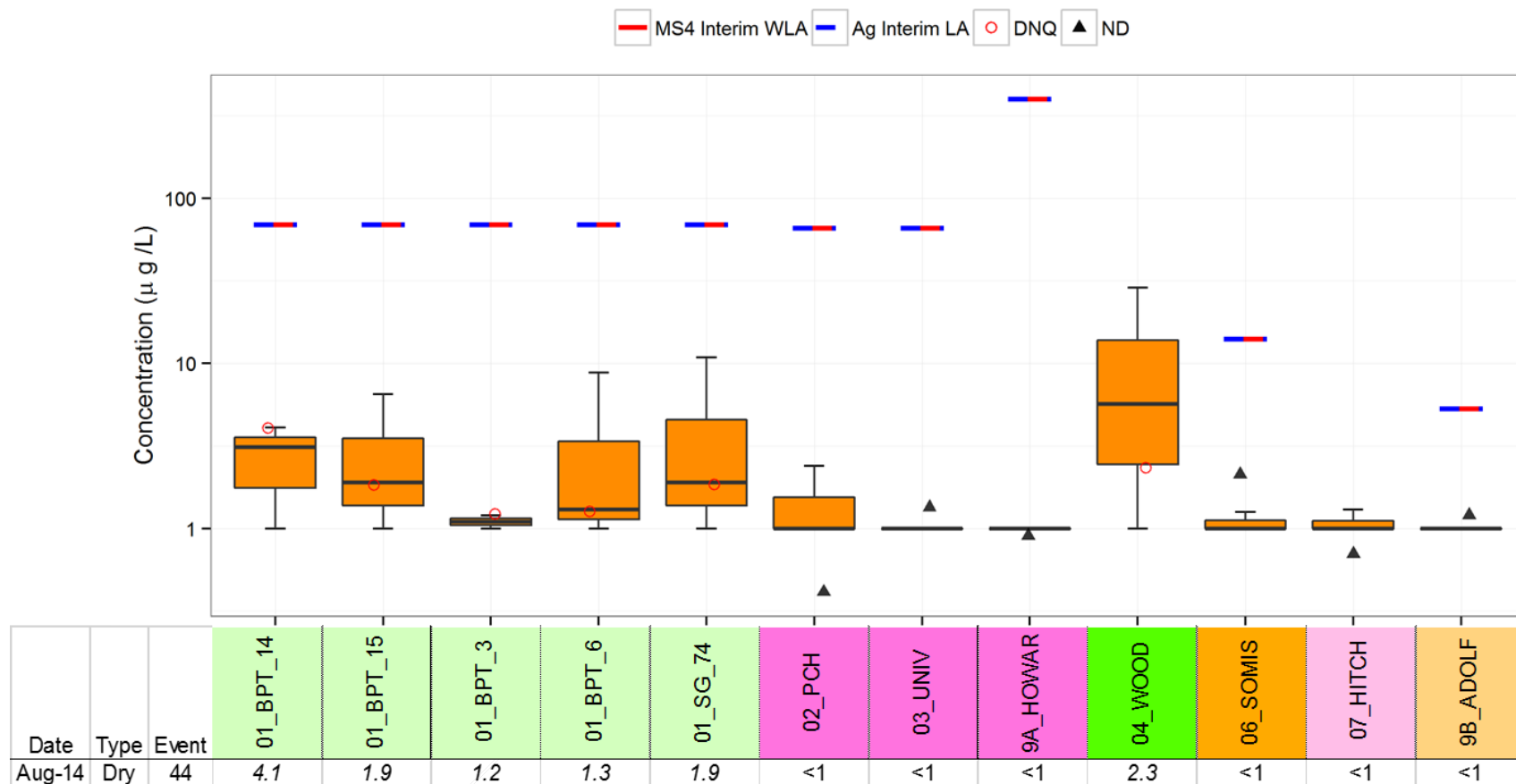


Figure 20. 4,4'-DDD Sediment Concentrations in Receiving Water Sites: 2008-2015

### 4-4'-DDE in Sediment Sites: 2008-2015

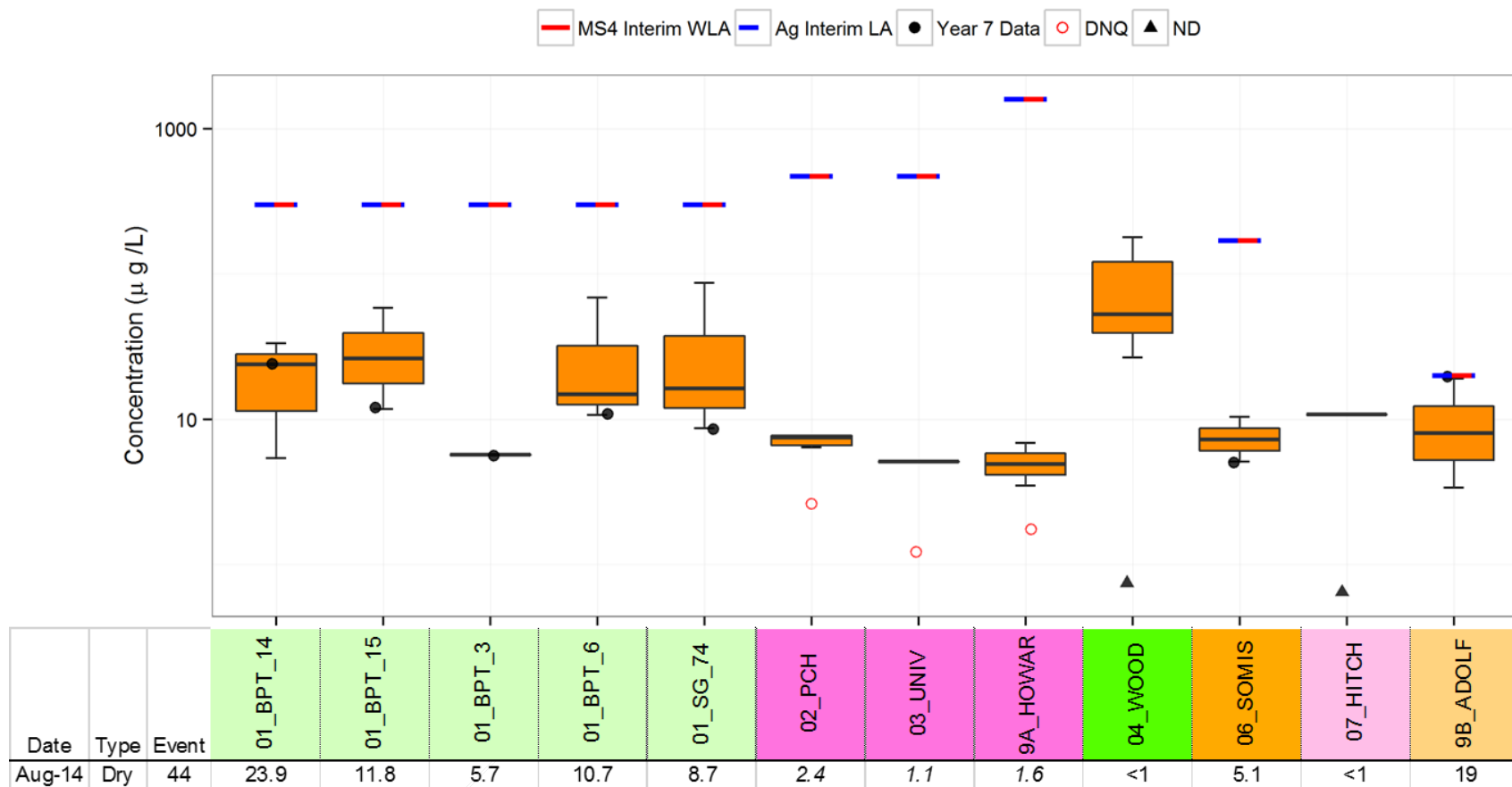


Figure 21. 4,4'-DDE Sediment Concentrations in Receiving Water Sites: 2008-2015

### 4-4'-DDT in Sediment Sites: 2008-2015

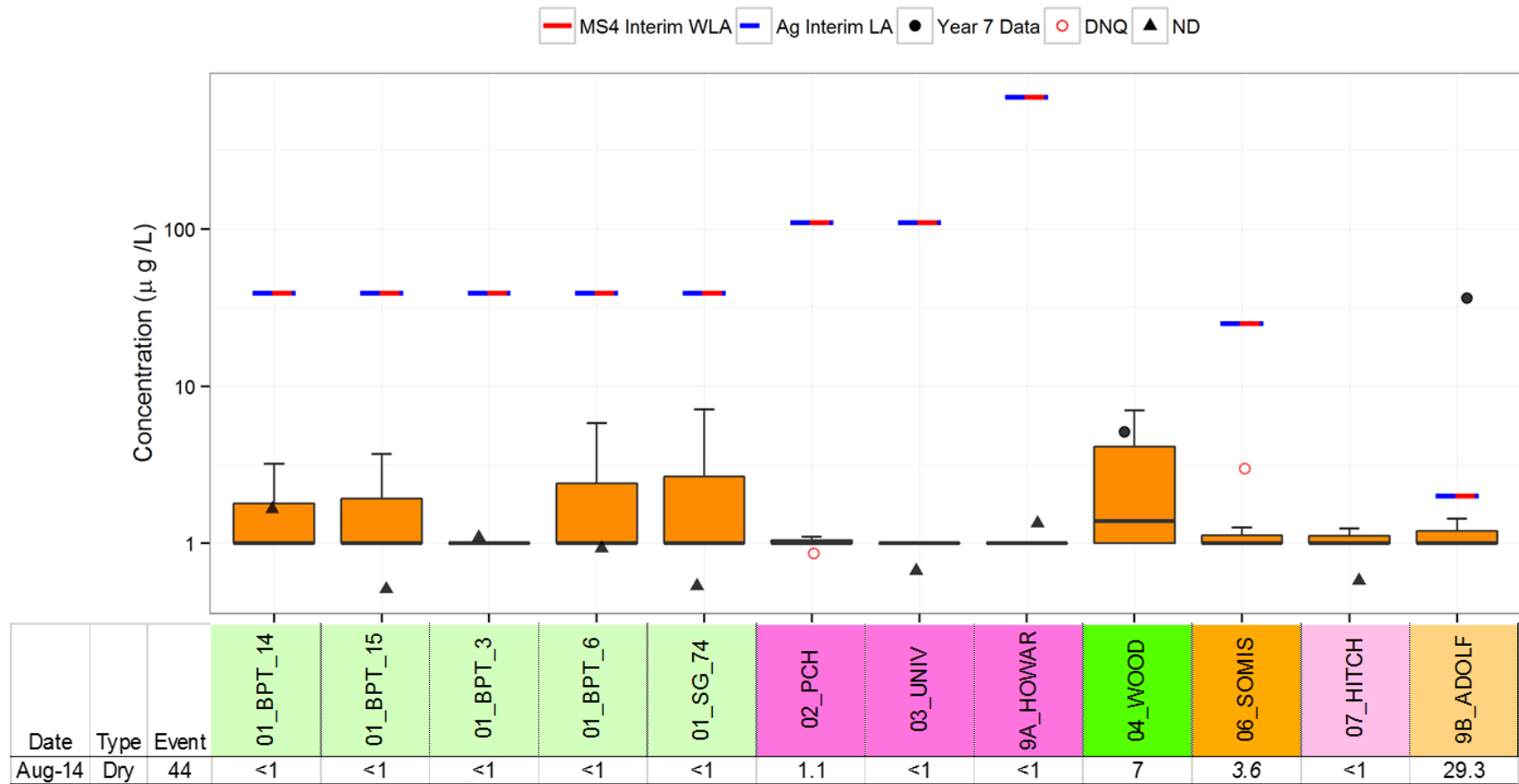


Figure 22. 4,4'-DDT Sediment Concentrations in Receiving Water Sites: 2008-2015

### Total Chlordane in Sediment Sites: 2008-2015

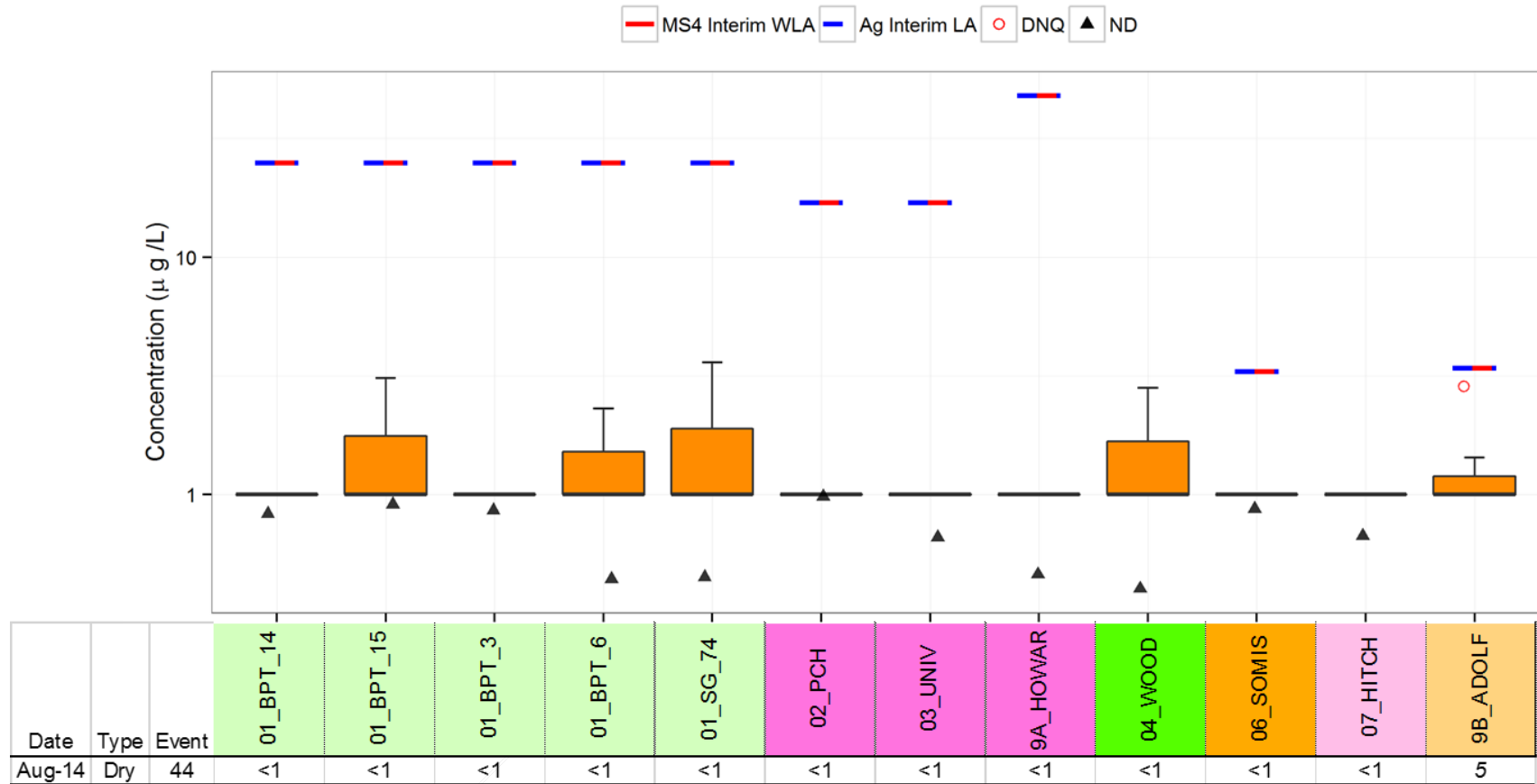


Figure 23. Total Chlordane Sediment Concentrations in Receiving Water Sites: 2008-2015

### Toxaphene in Sediment Sites: 2008-2015

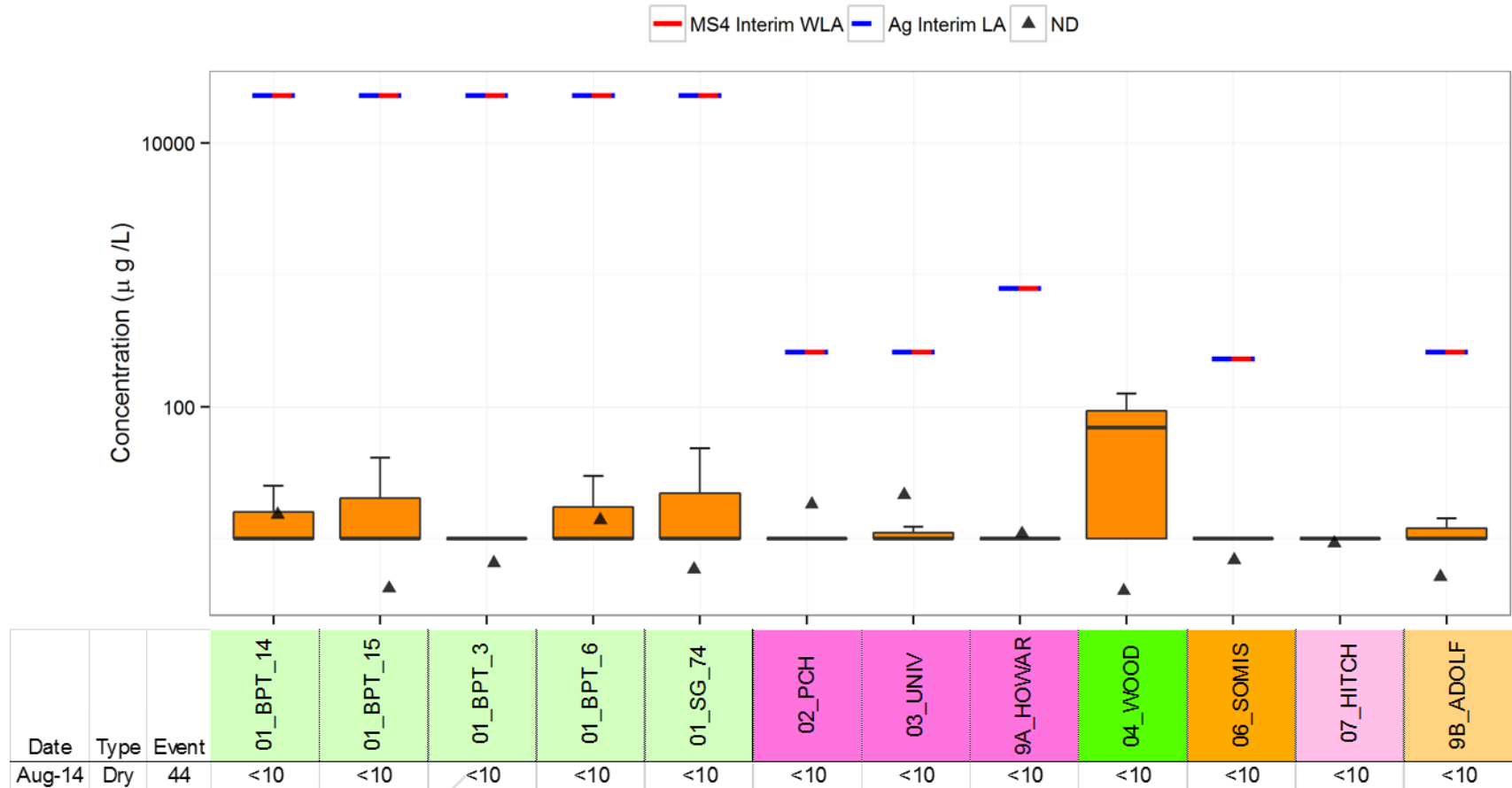
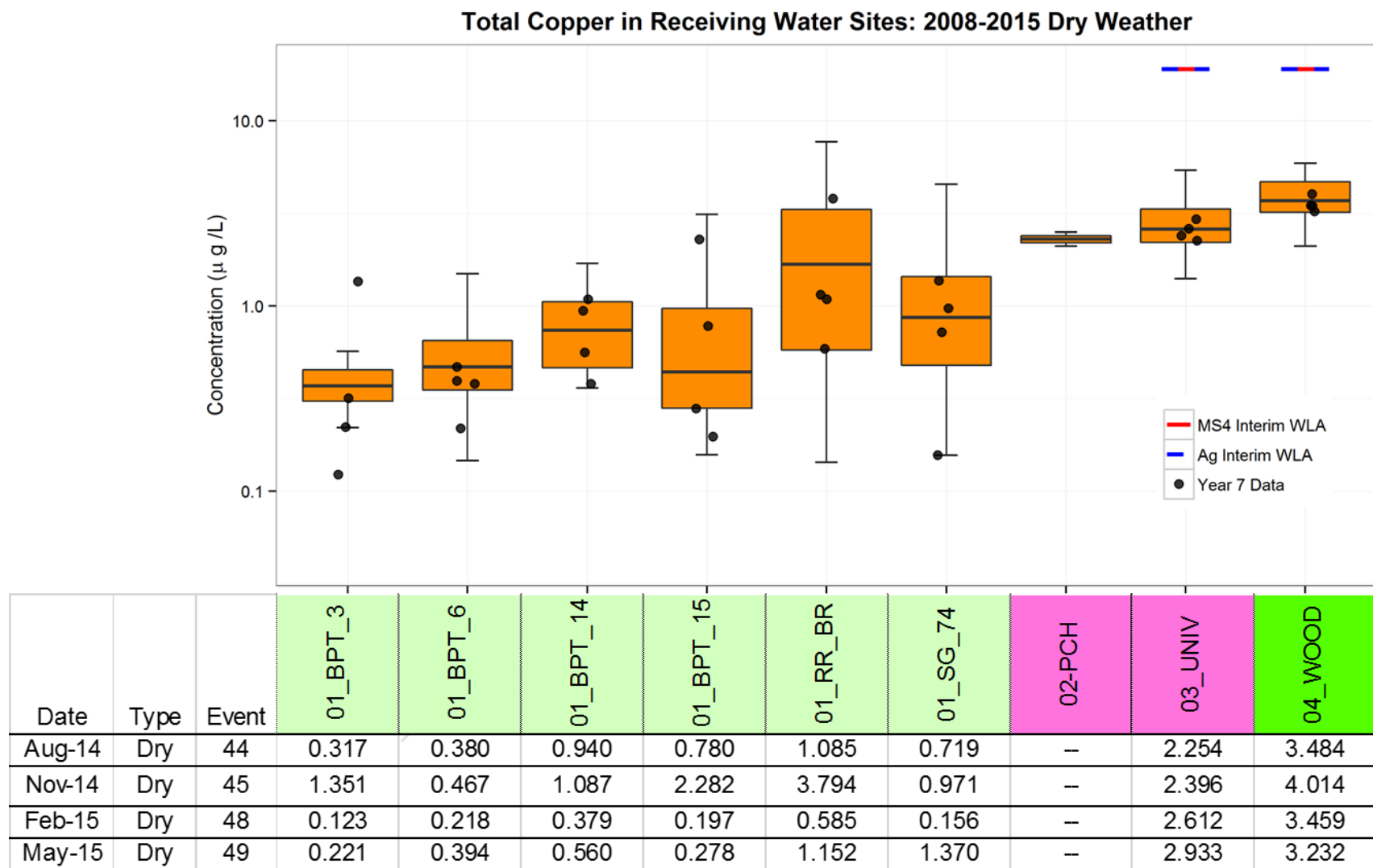


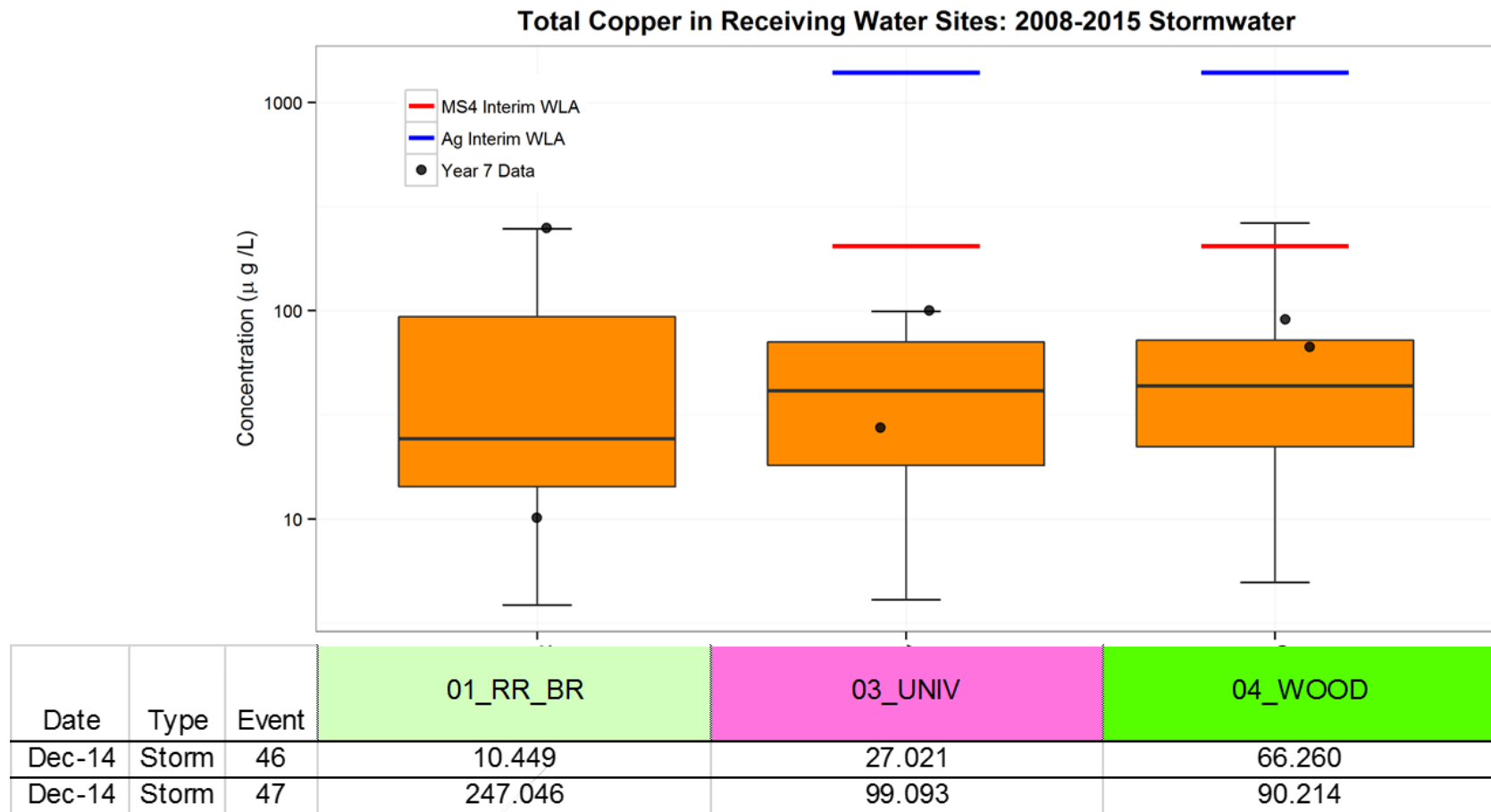
Figure 24. Toxaphene Sediment Concentrations in Receiving Water Sites: 2008-2015

## METALS TMDL DATA SUMMARY

The following figures present metals water quality data from receiving water, agricultural, urban, and POTW monitoring sites. Currently effective total metals interim load allocations and waste load allocations differ for wet and dry weather, therefore the data for each of these conditions is provided separately. Interim POTW waste load allocations for total mercury are in load form and are therefore calculated and presented in the compliance section of the report. The Metals TMDL specifies final targets for both dissolved copper and zinc. Dissolved concentrations for these two metals have been plotted for reference. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was DNQ. Values in the tables within each figure with a “<” preceding them, indicate the constituent was ND at the MDL for that constituent.

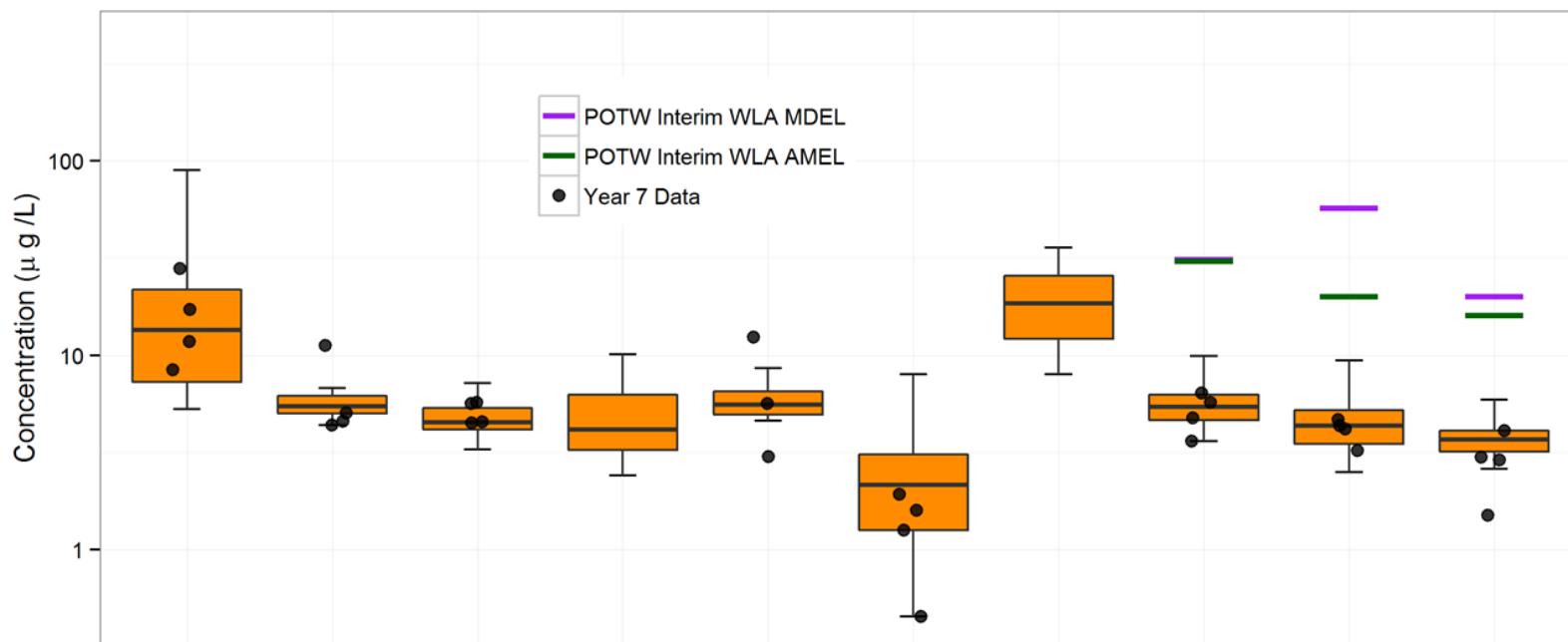


**Figure 25. Total Copper Dry Weather Concentrations in Receiving Water Sites: 2008-2015**



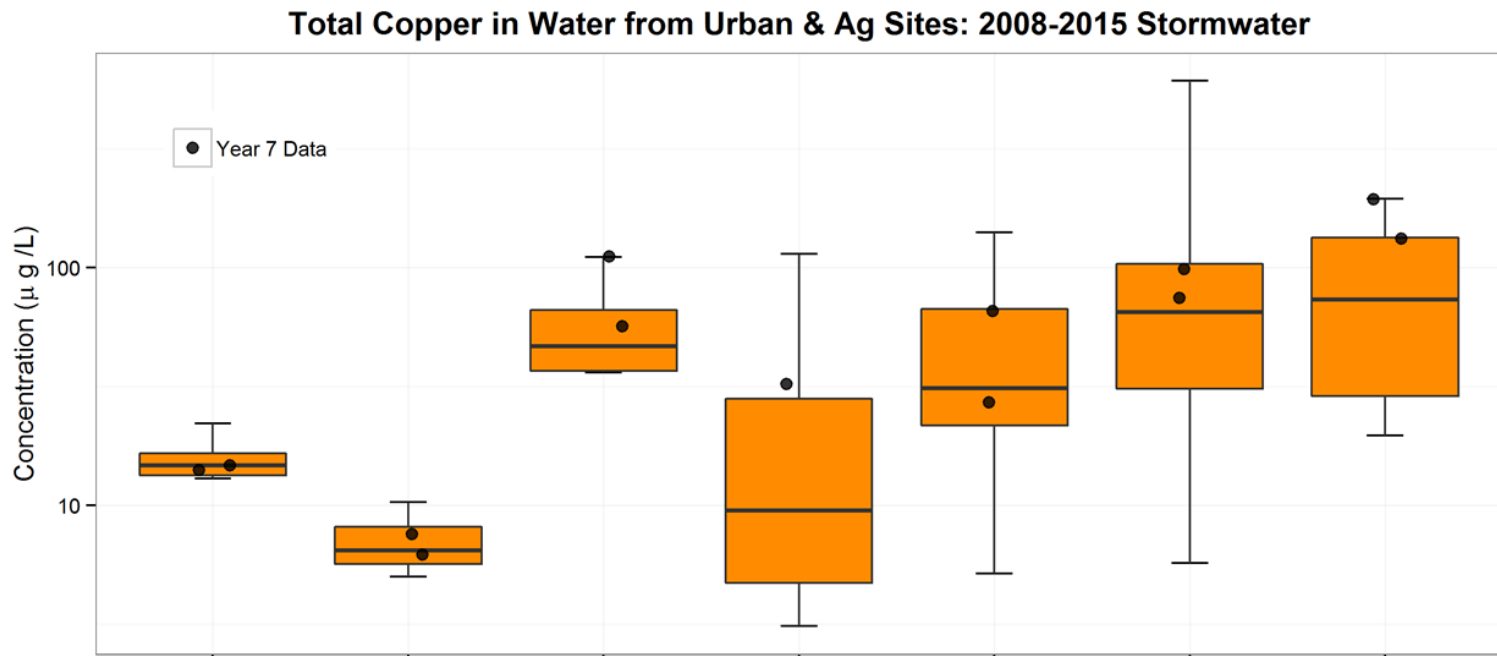
**Figure 26. Total Copper Stormwater Concentrations in Receiving Water Sites: 2008-2015**

**Total Copper in Water from Urban, Ag, & POTW Sites: 2008-2015 Dry Weather**



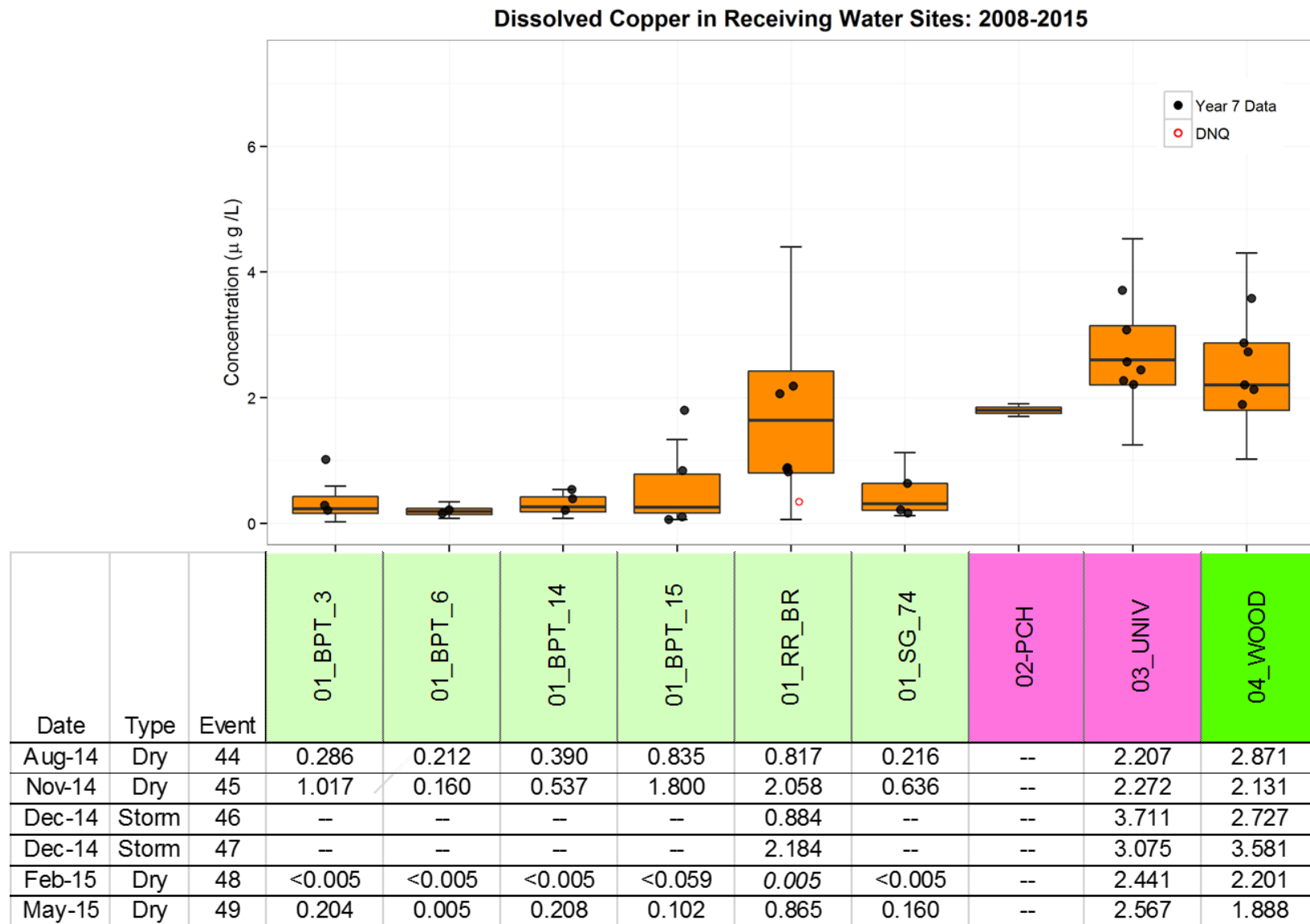
			04D_VENTURA	98D_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	98D_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Date	Type	Event										
Aug-14	Dry	44	11.772	11.272	5.652	-	--	1.263	--	6.376	4.659	2.9
Nov-14	Dry	45	17.151	4.566	5.708	-	3.007	1.597	--	5.714	4.343	1.5
Feb-15	Dry	48	27.864	5.065	4.497	-	12.399	0.454	--	3.622	3.242	3.0
May-15	Dry	49	8.413	4.372	4.551	-	5.668	1.928	--	4.755	4.166	4.1

**Figure 27. Total Copper Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2015**

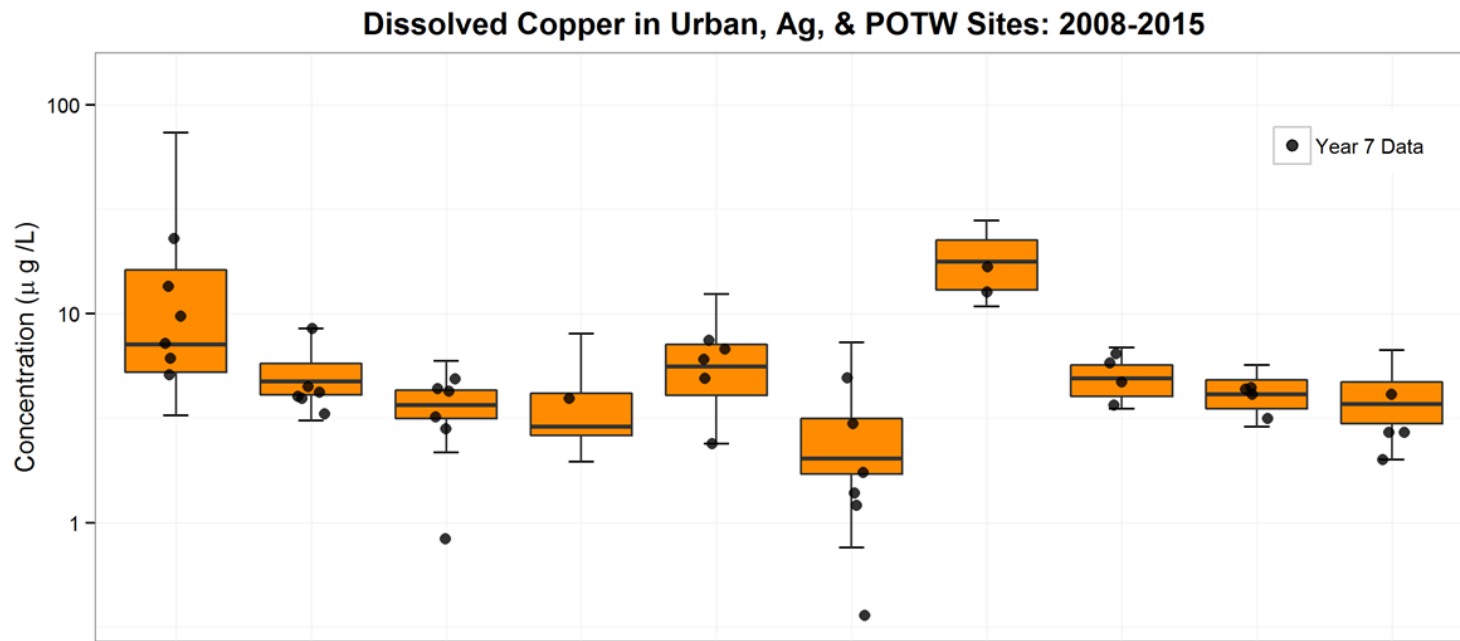


Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY
Dec-14	Storm	46	14.211	6.219	57.557	–	26.928	74.053	195.157
Dec-14	Storm	47	14.710	7.487	110.919	32.210	65.235	98.181	131.683

**Figure 28. Total Copper Wet Weather Concentrations in Urban and Ag Sites: 2008-2014**

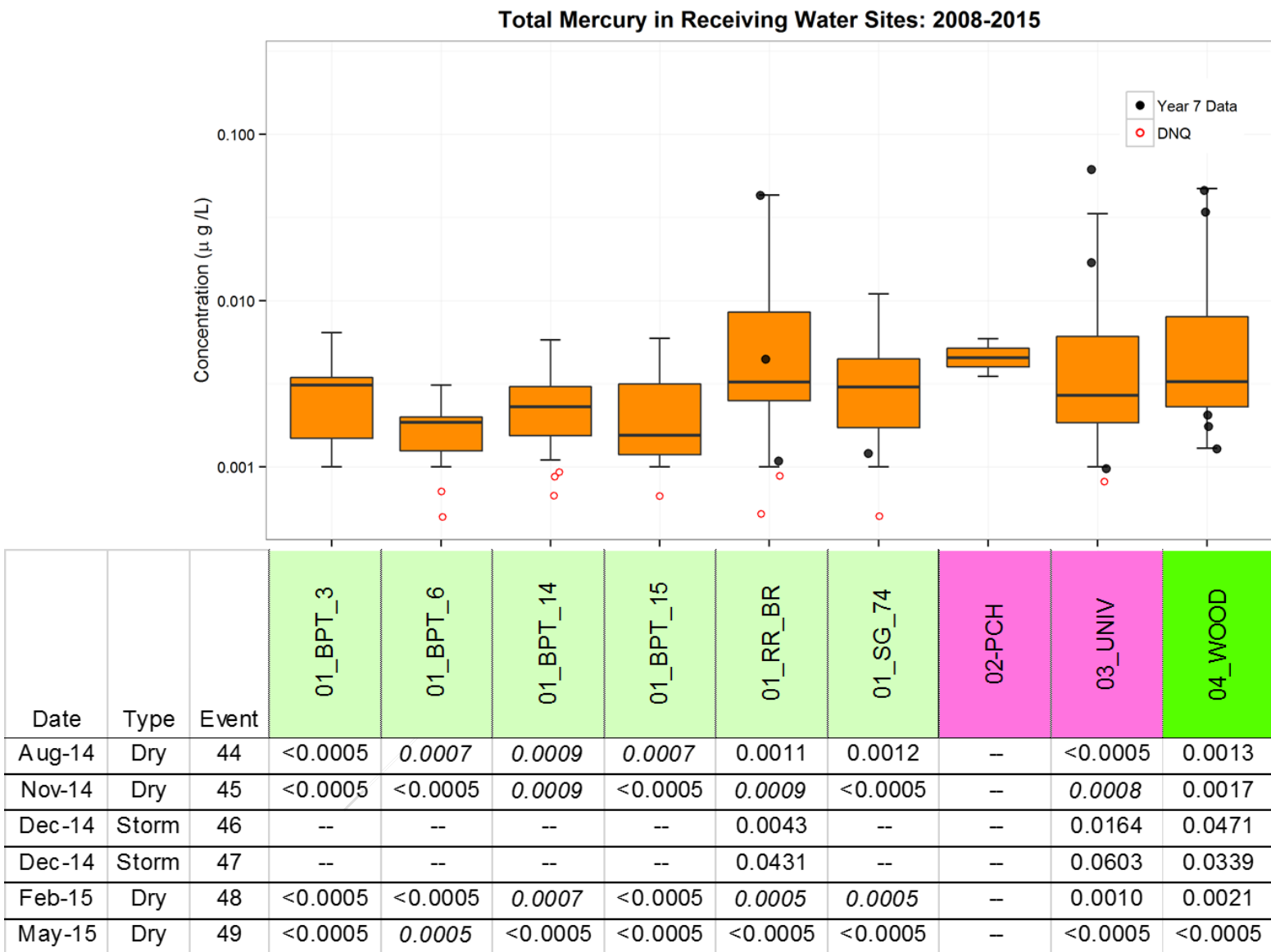


**Figure 29. Dissolved Copper Concentrations in Receiving Water Sites: 2008-2015**

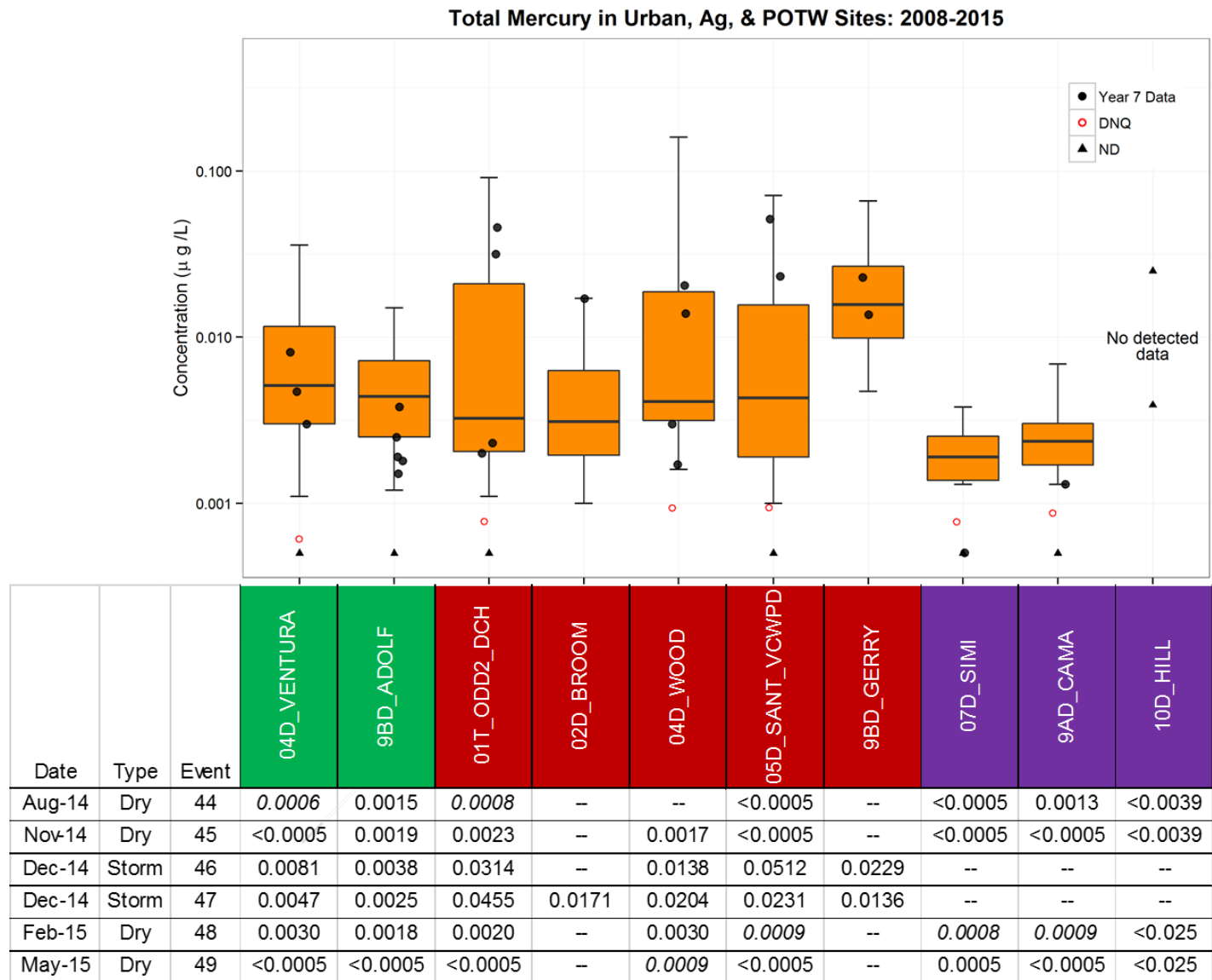


Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-14	Dry	44	9.740	8.500	4.878	--	--	1.207	--	6.430	4.36	2.7
Nov-14	Dry	45	13.469	4.211	4.262	--	2.386	1.387	--	5.815	4.42	2.0
Dec-14	Storm	46	5.085	3.931	0.836	--	6.040	2.980	16.712	--	--	--
Dec-14	Storm	47	6.118	3.308	2.818	3.918	6.766	4.939	12.671	--	--	--
Feb-15	Dry	48	22.843	4.479	3.206	--	7.439	0.360	--	3.642	3.16	2.7
May-15	Dry	49	7.219	4.010	4.375	--	4.892	1.742	--	4.706	4.10	4.1

**Figure 30. Dissolved Copper Concentrations in Urban, Ag, and POTW Sites: 2008-2015**

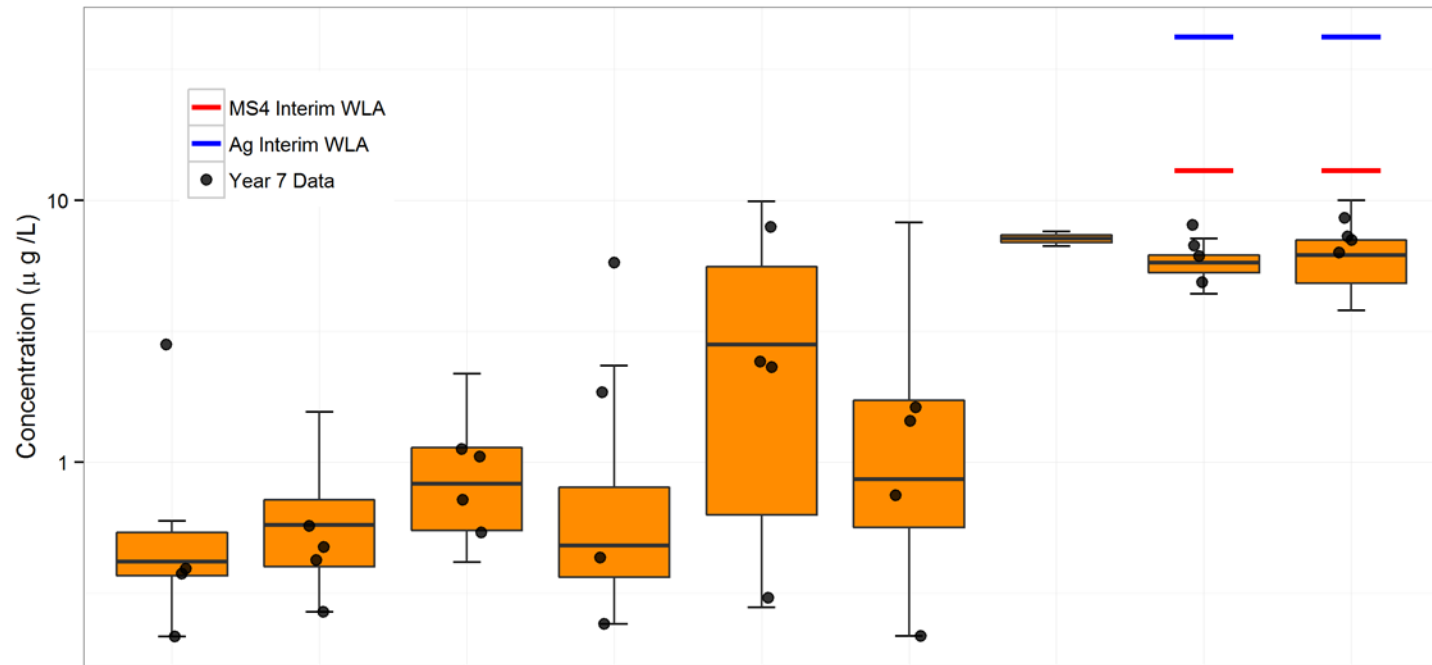


**Figure 31. Total Mercury Concentrations in Receiving Water Sites: 2008-2015**



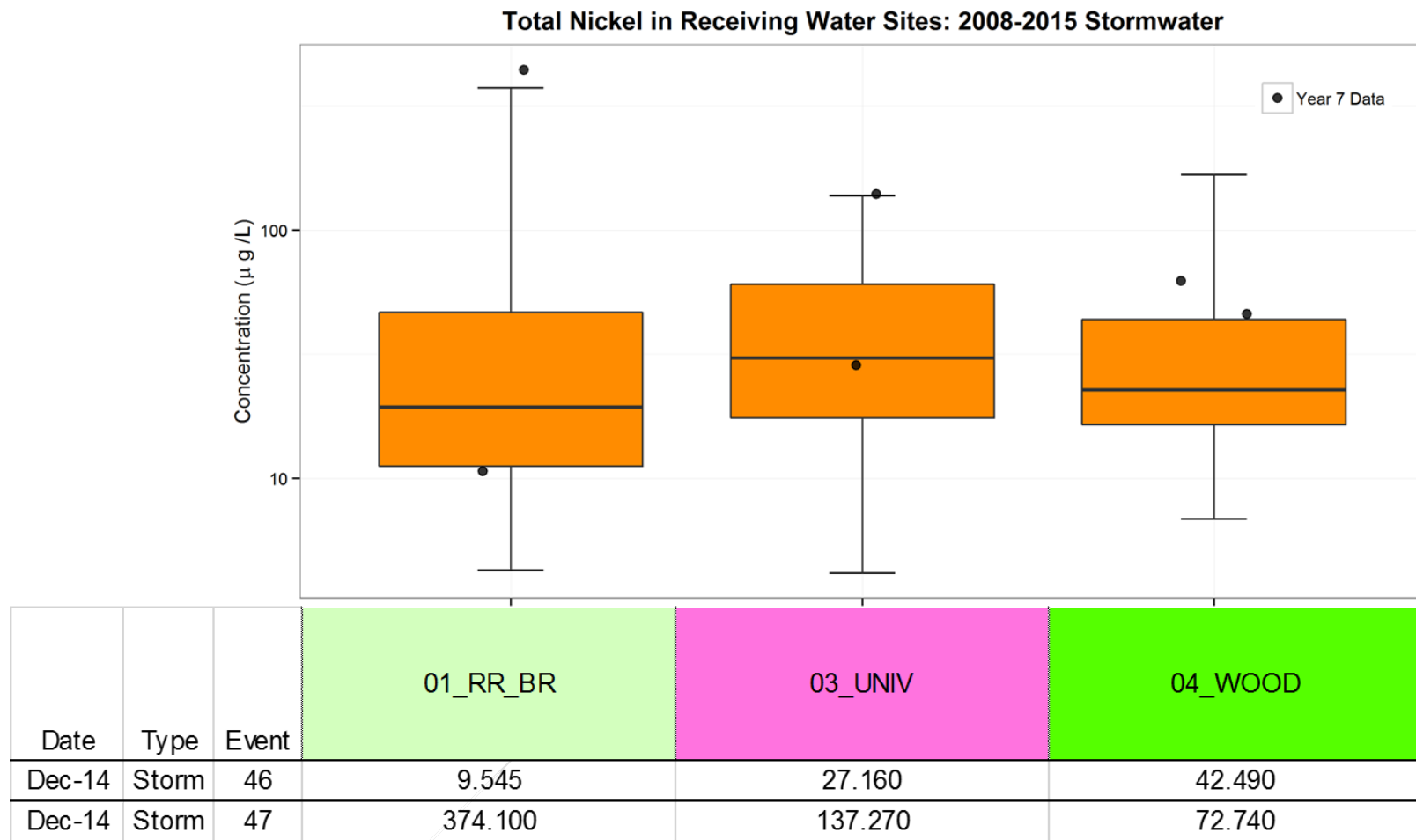
**Figure 32. Total Mercury Concentrations in Urban and Ag Sites: 2008-2015**

**Total Nickel in Receiving Water Sites: 2008-2015 Dry Weather**



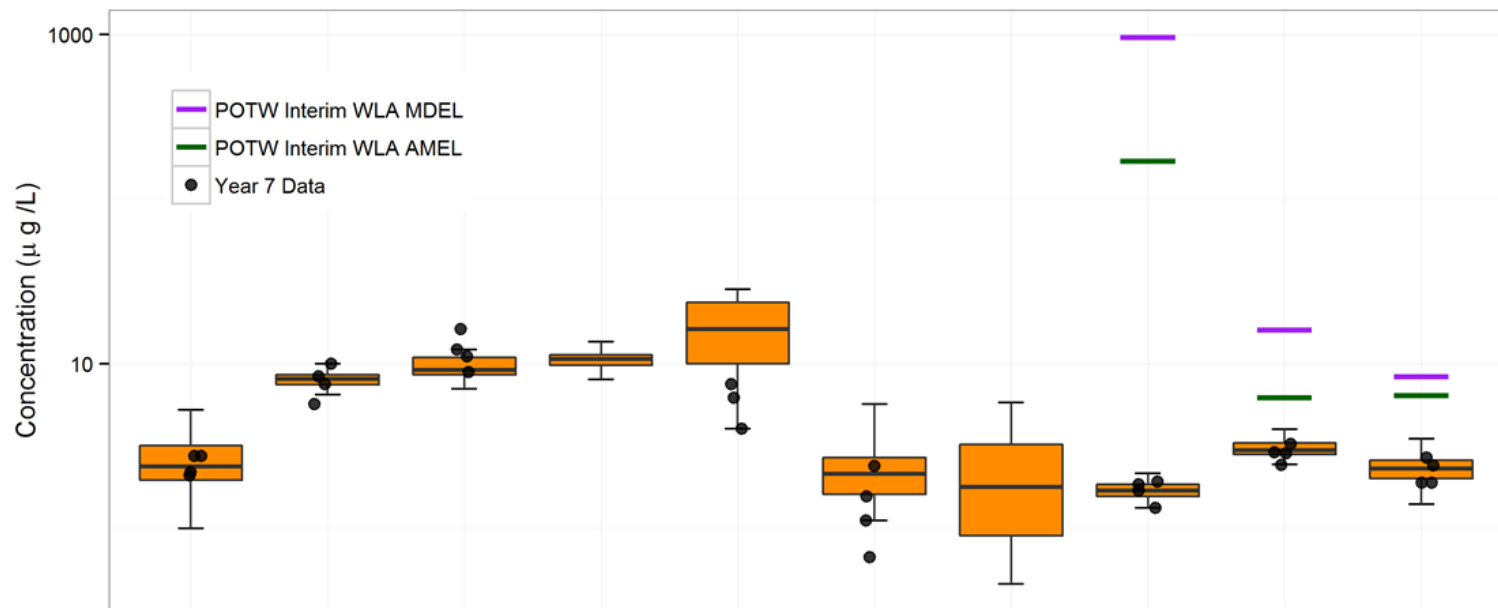
Date	Type	Event	01_BPT_3	01_BPT_6	01_BPT_14	01_BPT_15	01_RR_BR	01_SG_74	02-PCH	03_UNIV	04_WOOD
Aug-14	Dry	44	0.375	0.475	1.127	1.855	2.309	0.750	—	6.700	7.290
Nov-14	Dry	45	2.817	0.571	1.056	5.767	7.881	1.622	—	8.050	8.600
Feb-15	Dry	48	0.216	0.268	0.540	0.241	0.303	0.217	—	4.860	7.060
May-15	Dry	49	0.391	0.423	0.720	0.432	2.430	1.443	—	6.120	6.330

**Figure 33. Total Nickel Dry Weather Concentrations in Receiving Water Sites: 2008-2015**



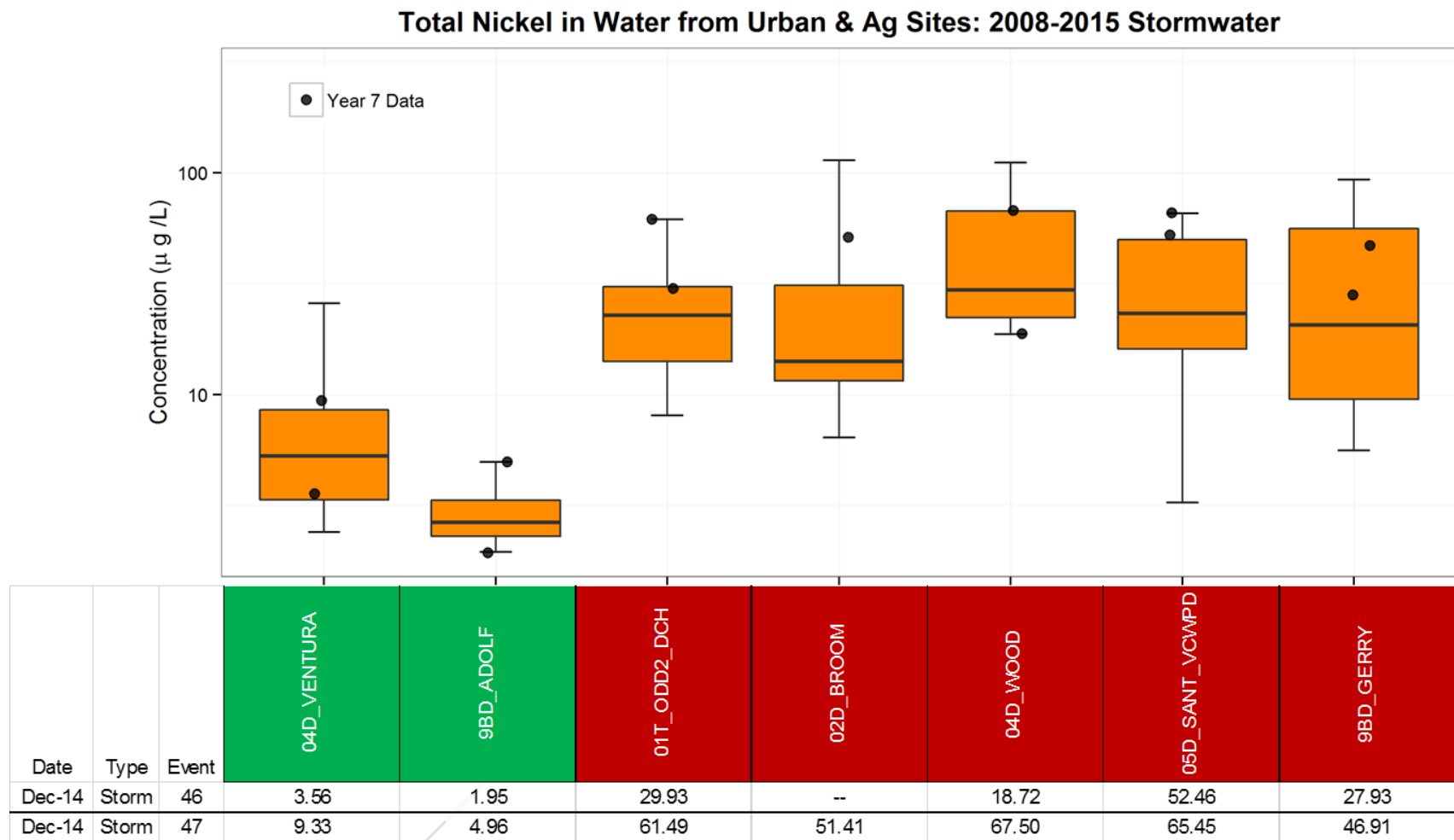
**Figure 34. Total Nickel Stormwater Concentrations in Receiving Water Sites: 2008-2015**

**Total Nickel in Water from Urban, Ag, & POTW Sites: 2008-2015 Dry Weather**

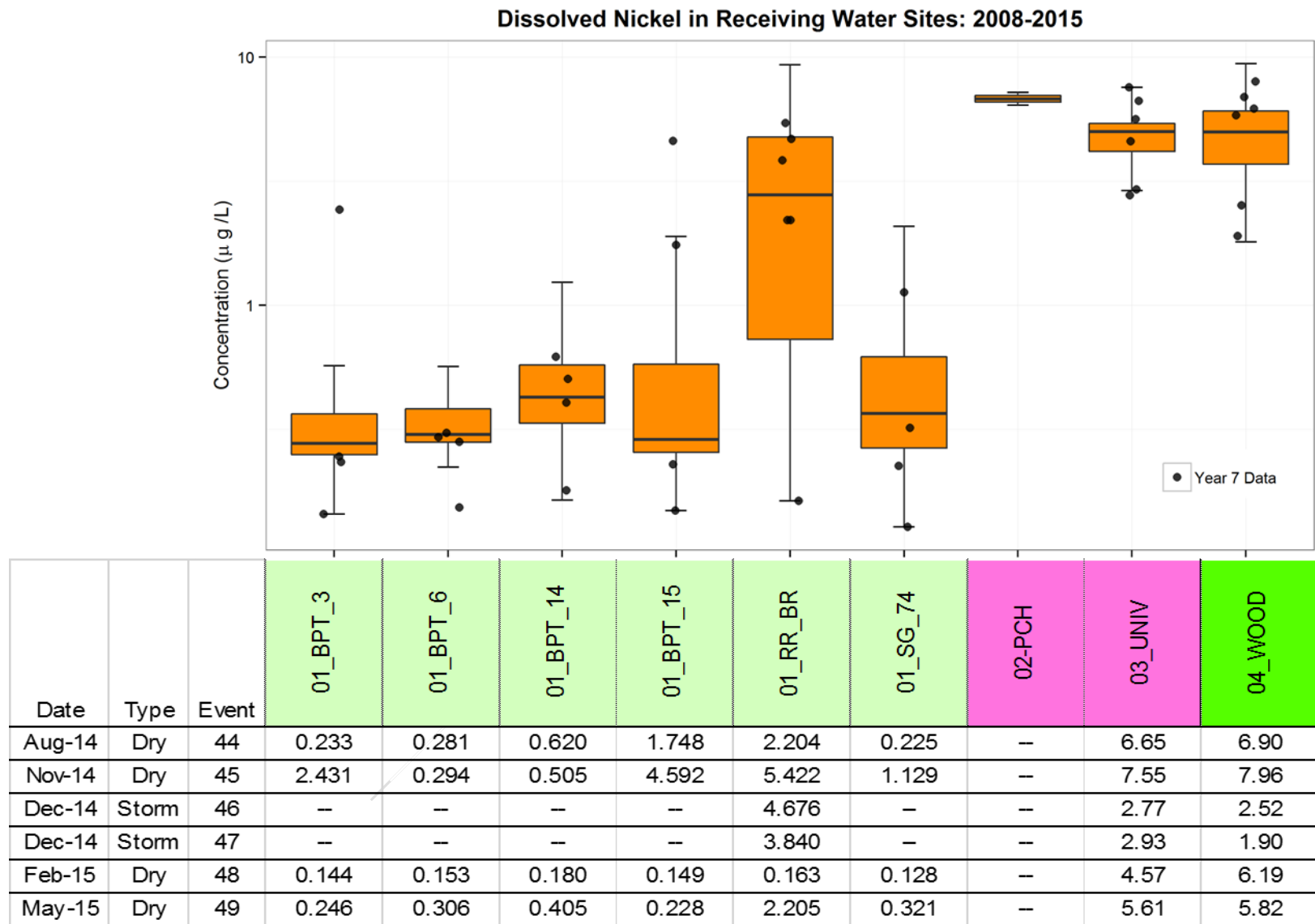


Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-14	Dry	44	2.74	9.99	16.22	--	--	1.12	--	1.85	3.25	2.40
Nov-14	Dry	45	2.20	5.67	12.18	--	4.03	1.56	--	1.70	2.86	2.70
Feb-15	Dry	48	2.74	7.49	8.88	--	6.20	0.67	--	1.33	2.44	1.90
May-15	Dry	49	2.09	8.41	11.06	--	7.56	2.40	--	1.93	2.89	1.90

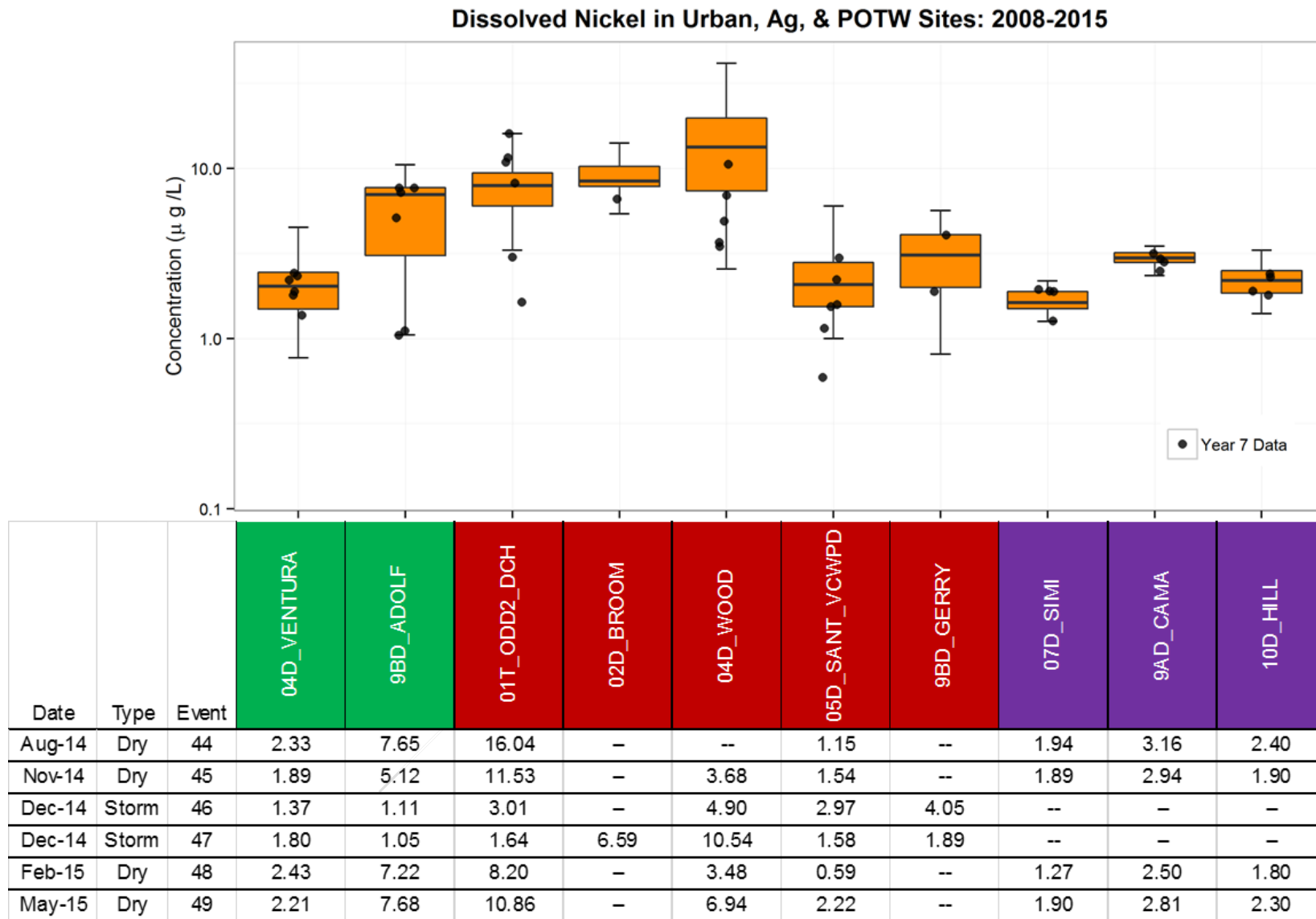
**Figure 35. Total Nickel Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2015**



**Figure 36. Total Nickel Stormwater Concentrations in Urban and Ag Sites: 2008-2015**

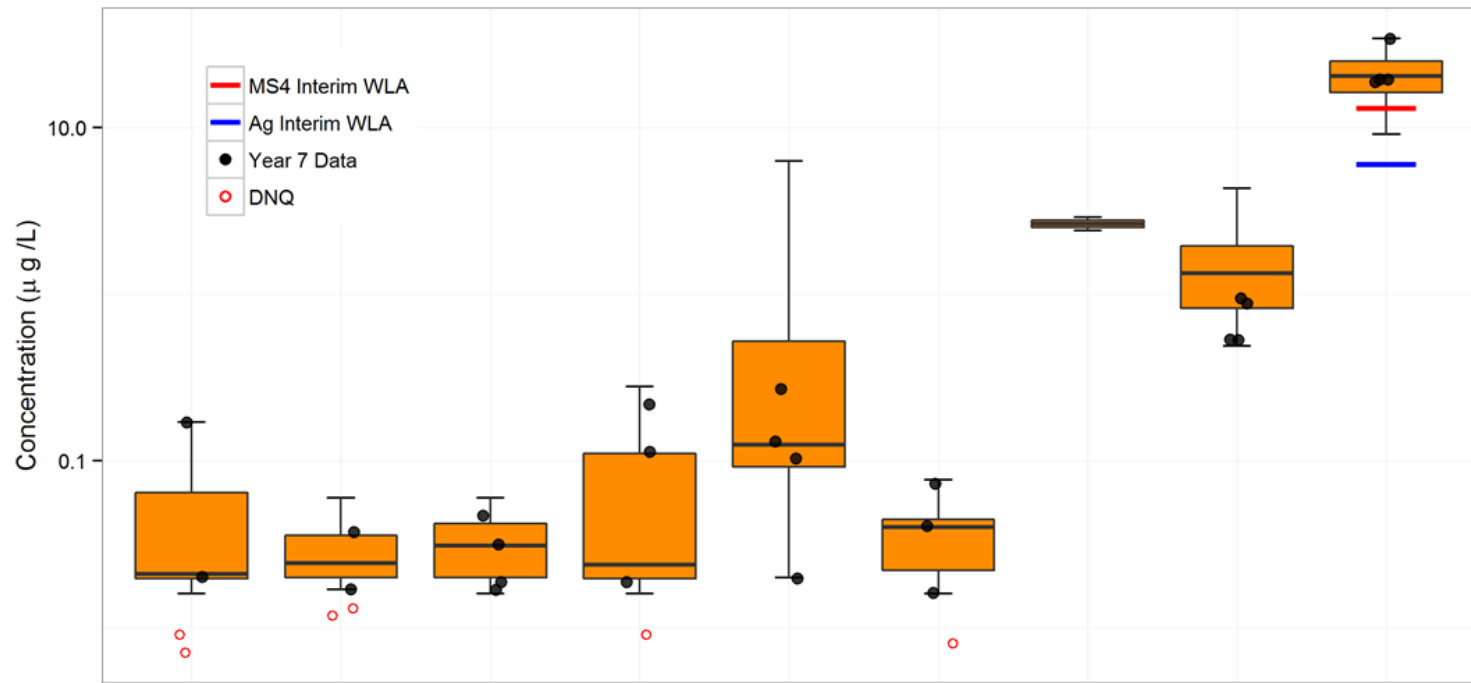


**Figure 37. Dissolved Nickel Concentrations in Receiving Water Sites: 2008-2015**



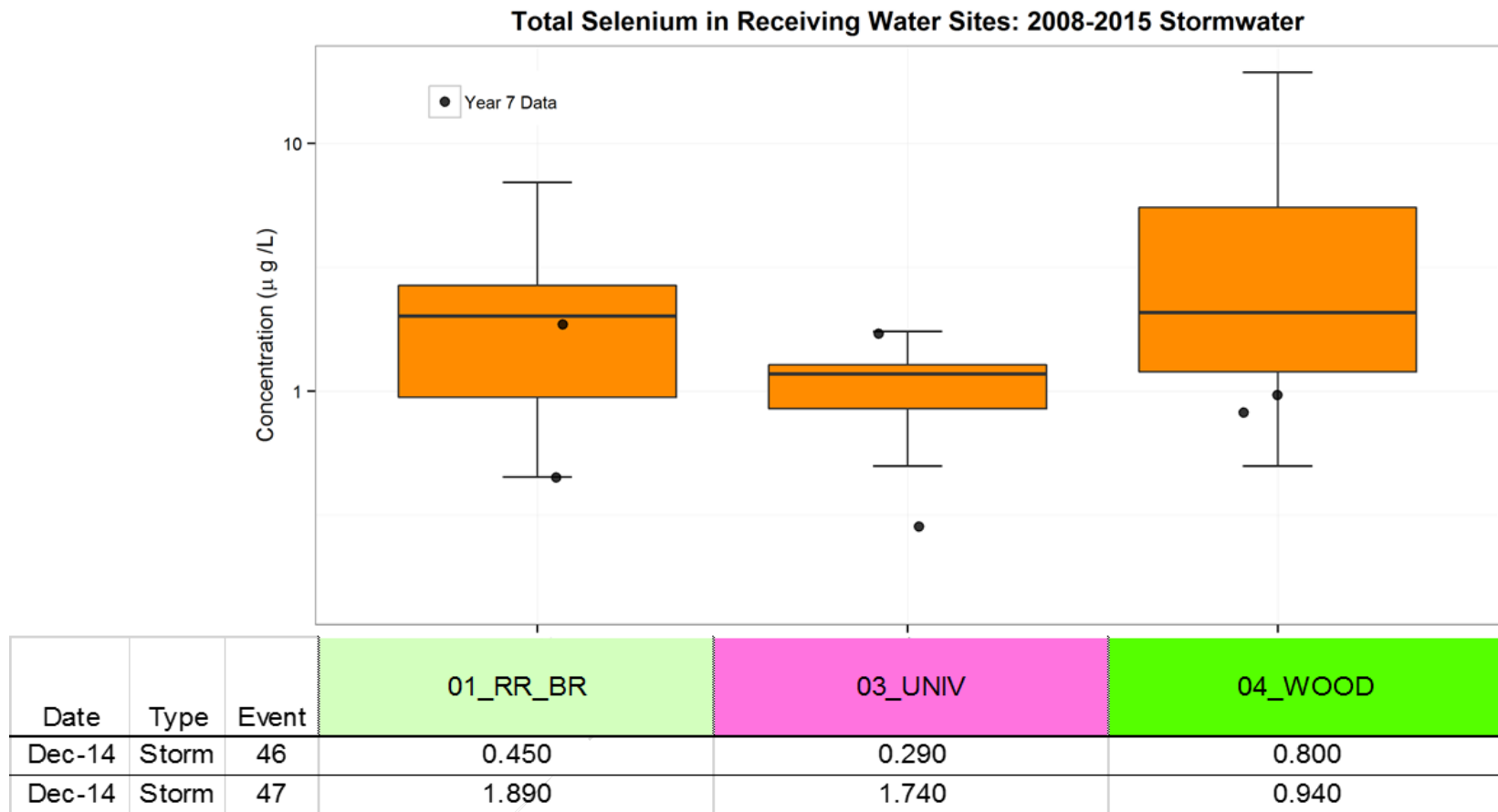
**Figure 38. Dissolved Nickel Concentrations in Urban, Ag, and POTW Sites: 2008-2015**

**Total Selenium in Receiving Water Sites: 2008-2015 Dry Weather**

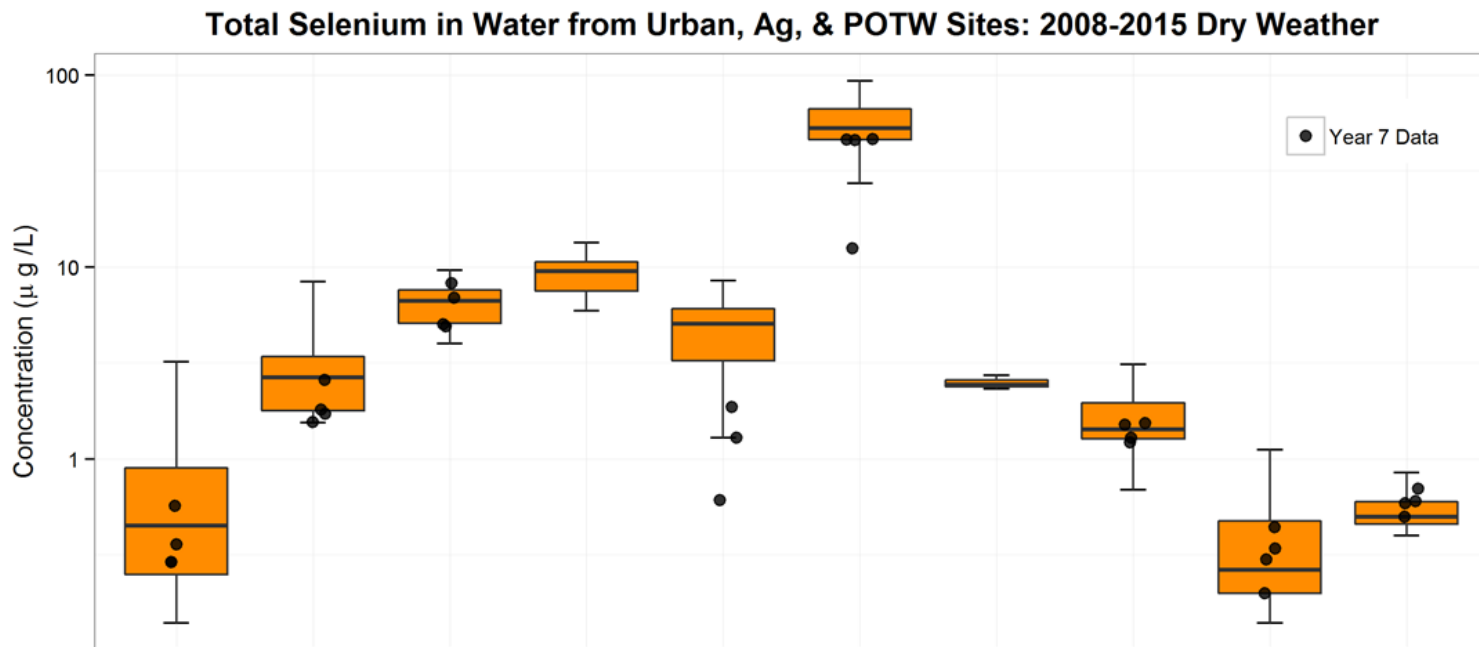


Date	Type	Event	01_BPT_3	01_BPT_6	01_BPT_14	01_BPT_15	01_RR_BR	01_SG_74	02-PCH	03_UNIV	04_WOOD
Aug-14	Dry	44	0.009	0.013	0.046	0.113	0.130	0.016	-	0.540	34.100
Nov-14	Dry	45	0.171	0.038	0.019	0.213	0.270	0.074	-	0.540	19.460
Feb-15	Dry	48	0.007	0.012	0.017	0.009	0.020	0.008	-	0.870	19.460
May-15	Dry	49	0.020	0.017	0.031	0.019	0.102	0.041	-	0.940	18.490

**Figure 39. Total Selenium Dry Weather Concentrations in Receiving Water Sites: 2008-2015**

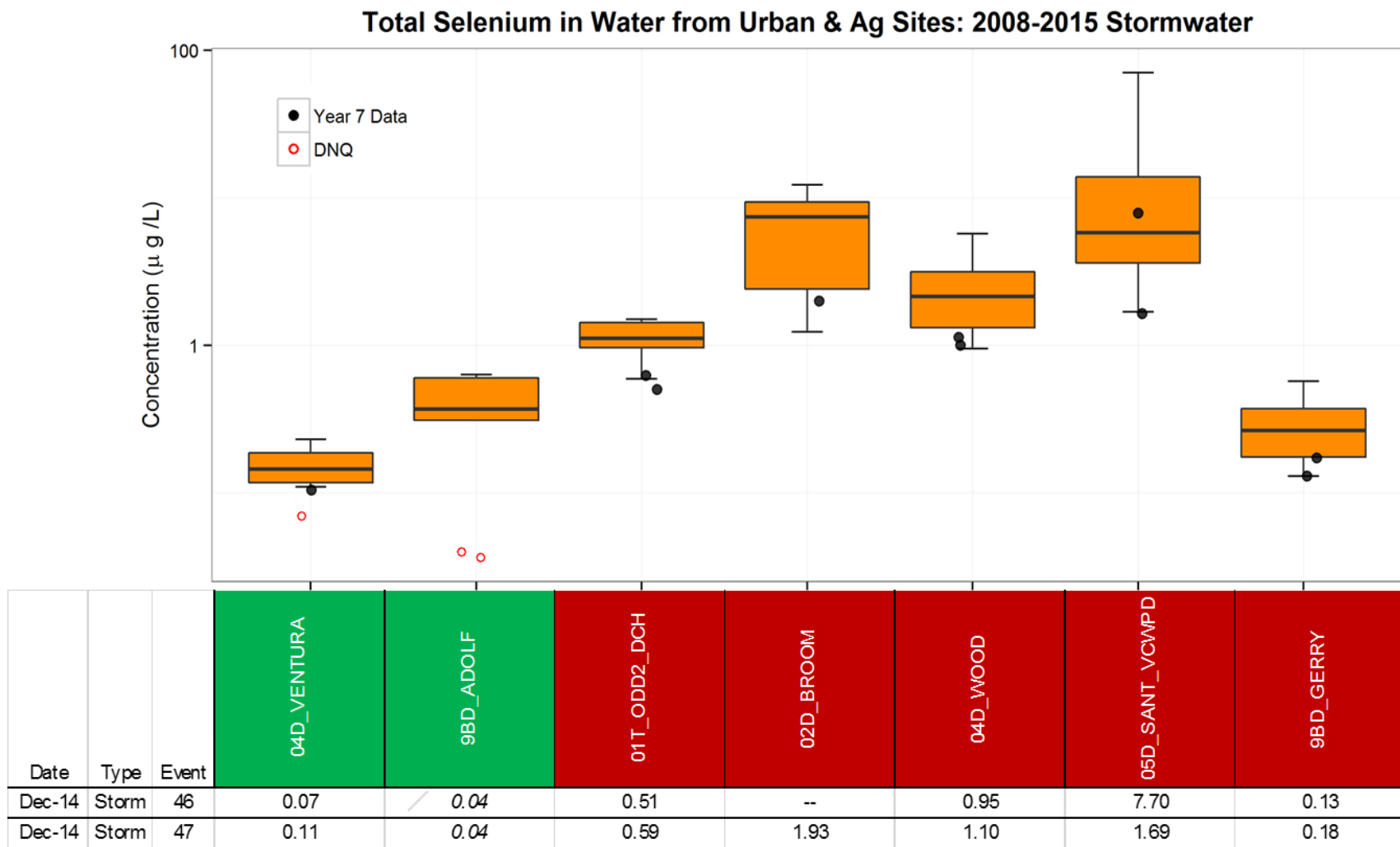


**Figure 40. Total Selenium Stormwater Concentration in Receiving Water Sites: 2008-2015**

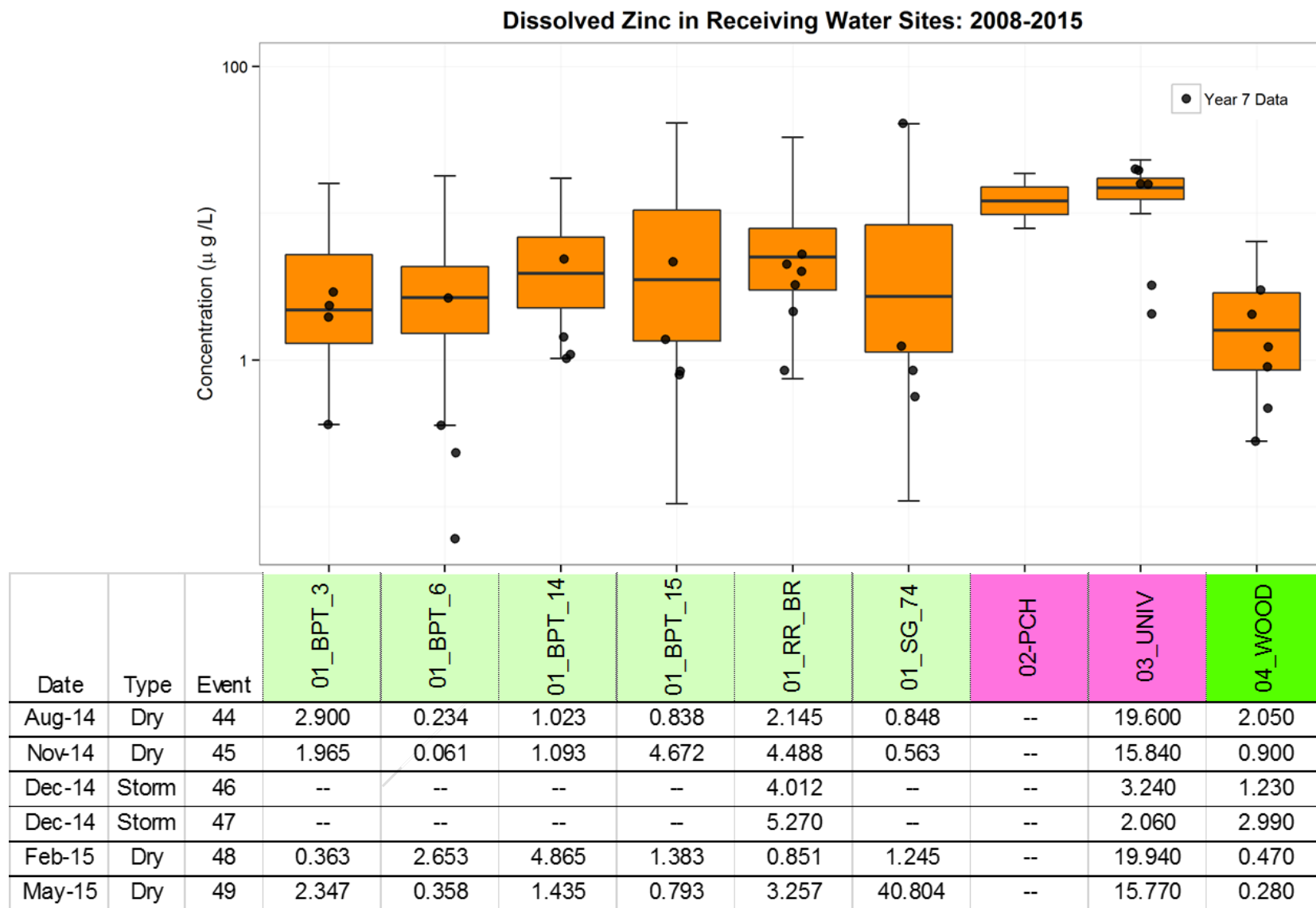


Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-14	Dry	44	0.29	1.55	5.05	--	--	46.00	--	1.29	0.30	0.50
Nov-14	Dry	45	0.36	1.81	8.20	--	1.87	46.23	--	1.22	0.34	0.70
Feb-15	Dry	48	0.29	2.57	4.89	--	1.29	12.46	--	1.51	0.20	0.59
May-15	Dry	49	0.57	1.72	6.92	--	0.61	45.74	--	1.54	0.44	0.60

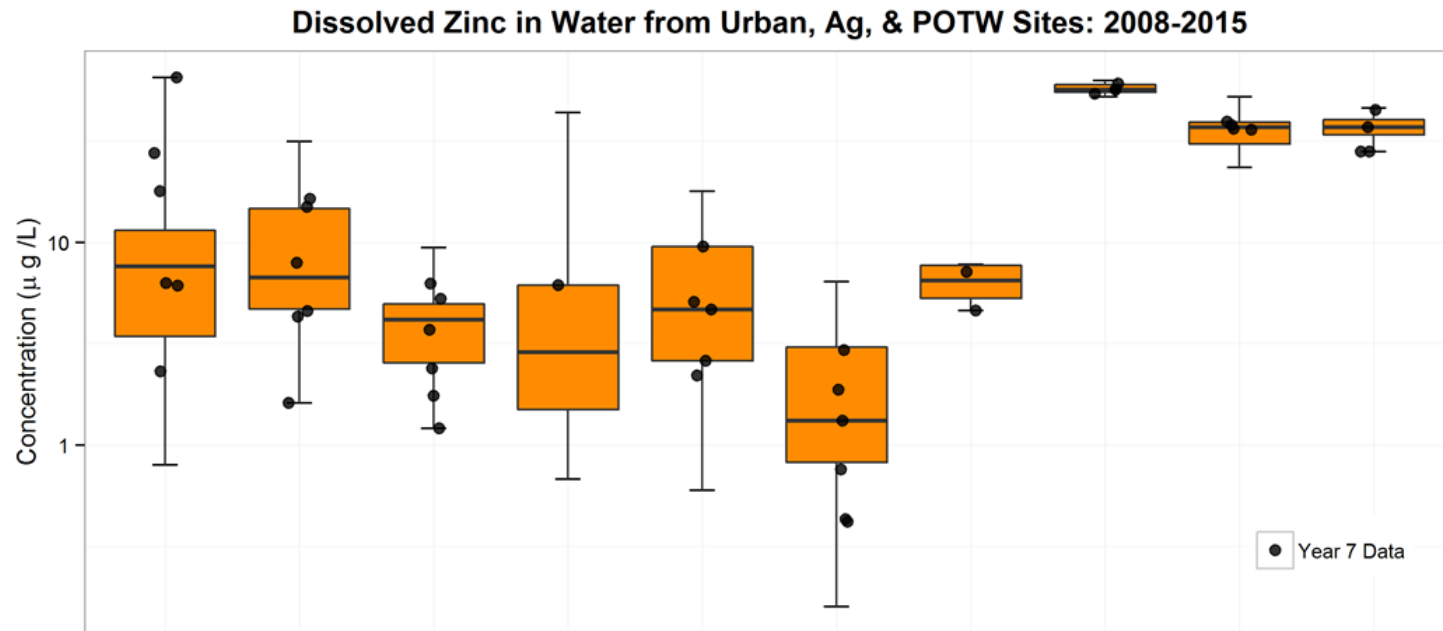
**Figure 41. Total Selenium Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2015**



**Figure 42. Total Selenium Stormwater Concentrations in Urban and Ag Sites: 2008-2015**



**Figure 43. Dissolved Zinc Concentrations in Receiving Water Sites: 2008-2015**



Date	Type	Event	04D_VENTURA	9BD_ADOLF	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-14	Dry	44	6.28	14.96	5.26	--	--	1.32	--	60.74	35.96	45
Nov-14	Dry	45	6.11	1.61	2.39	--	2.20	0.76	--	56.59	37.83	37
Dec-14	Storm	46	27.57	16.38	1.21	--	5.10	1.88	7.16	--	--	--
Dec-14	Storm	47	17.91	4.59	3.71	6.16	4.67	2.95	4.62	--	--	--
Feb-15	Dry	48	65.21	4.31	1.75	--	9.53	0.43	--	56.55	39.30	28
May-15	Dry	49	2.31	7.95	6.27	--	2.60	0.42	--	54.09	36.31	28

**Figure 44. Dissolved Zinc Concentrations in Urban, Ag, and POTW Sites: 2008-2015**

## TOXICITY TMDL

For the Toxicity TMDL, urban dischargers' and POTWs' final WLAs are effective as well as interim LAs for agricultural dischargers. The compliance points for these allocations are in the receiving waters at the base of the subwatersheds and are shown on the box plots for the appropriate site locations. Data for chlorpyrifos and diazinon has been separated into dry weather and stormwater since the allocations differ for the two conditions. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was DNQ. Values in the tables within each figure with a "<" preceding them, indicate the constituent was ND at the MDL for that constituent.



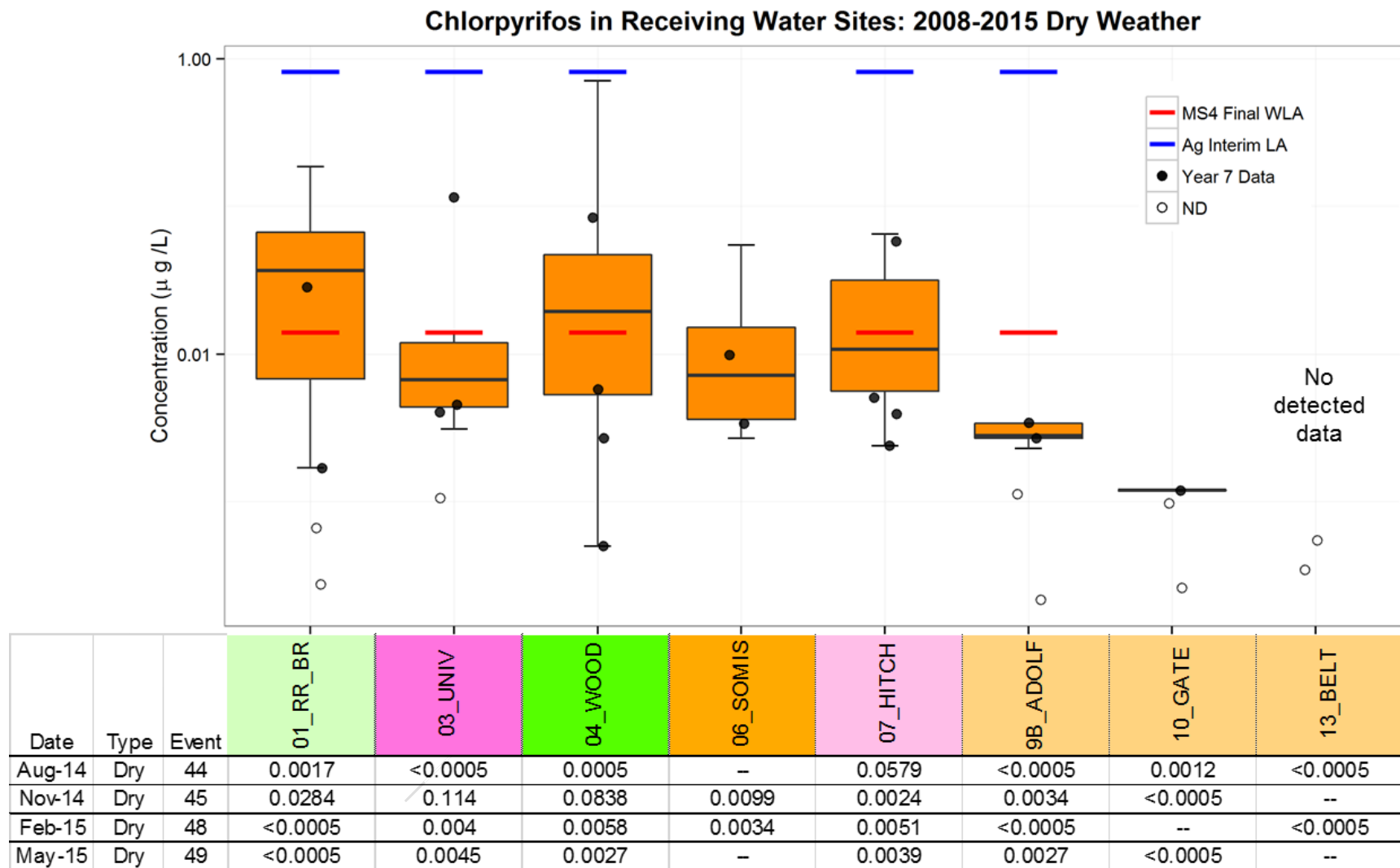
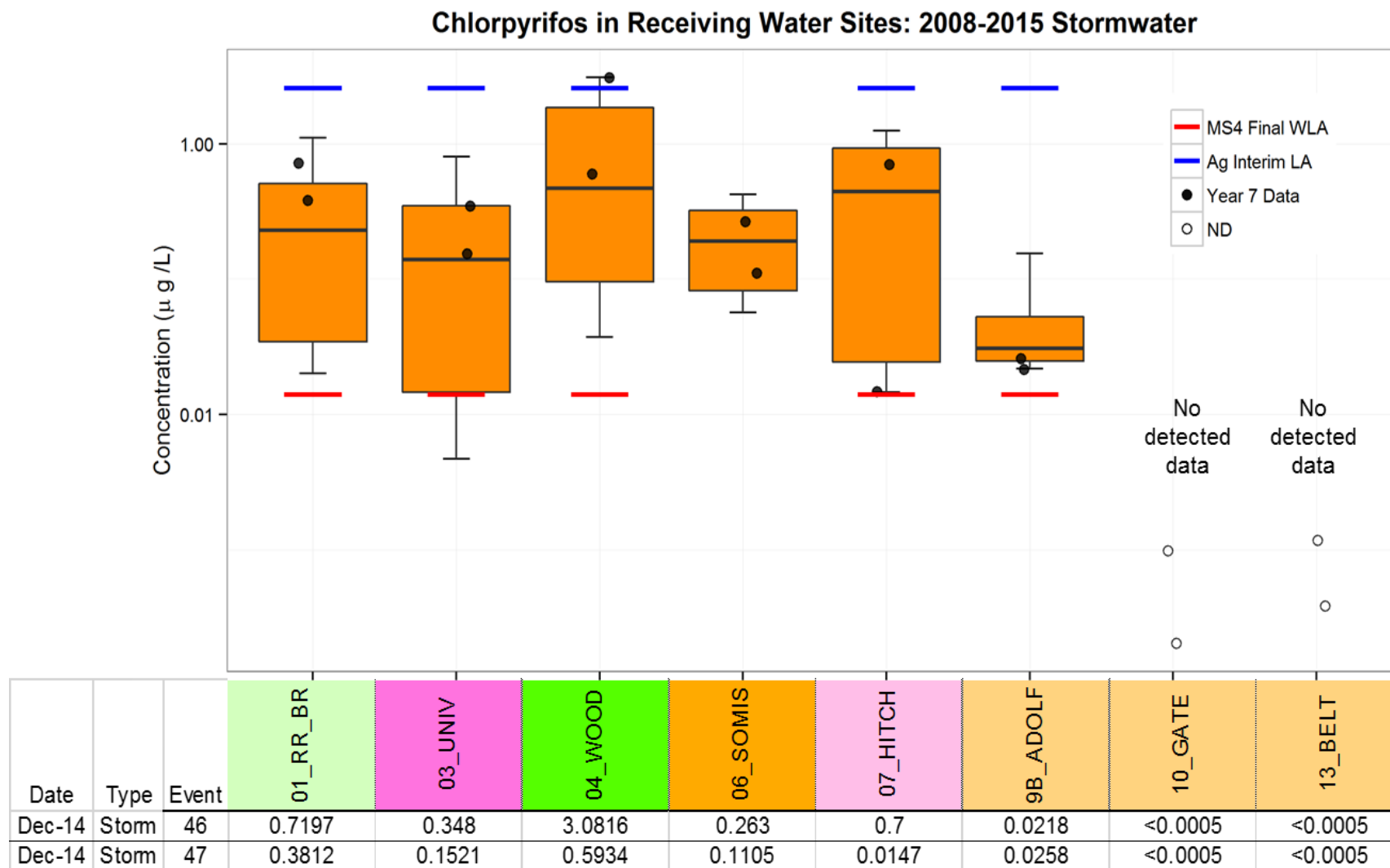
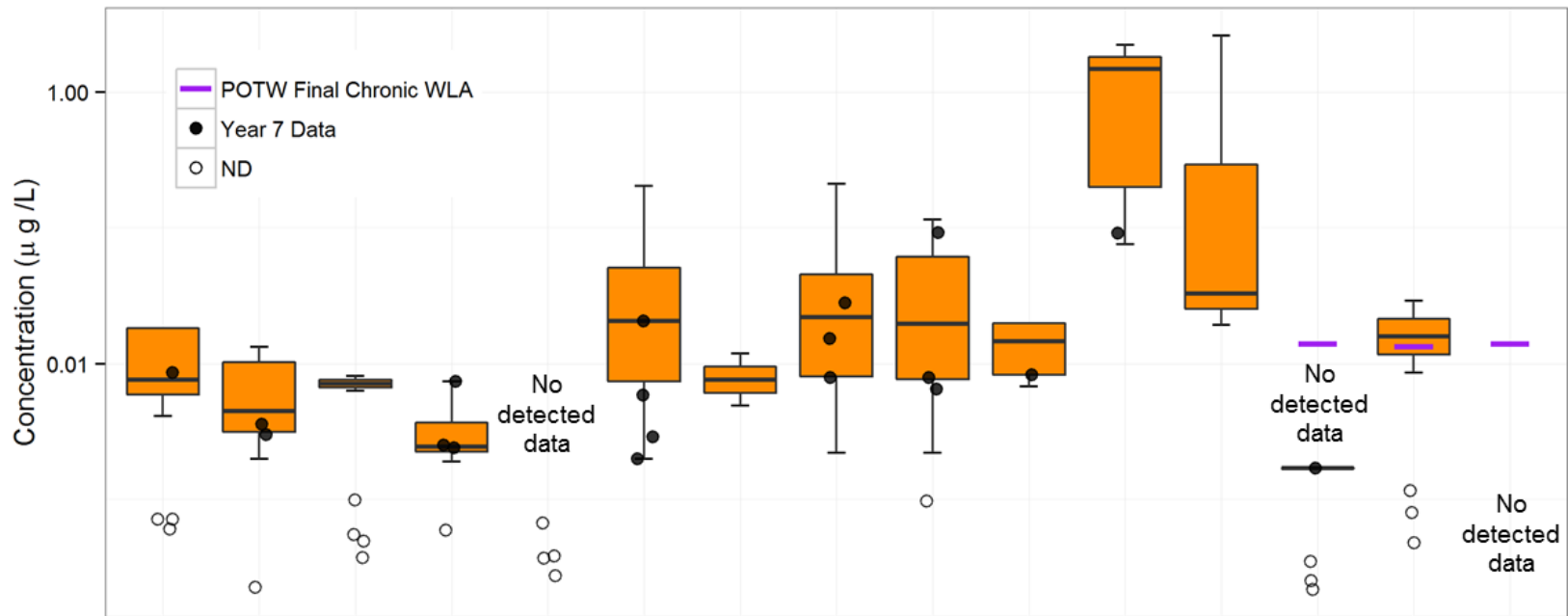


Figure 45. Chlorpyrifos Dry Weather Concentrations in Receiving Water Sites: 2008-2015



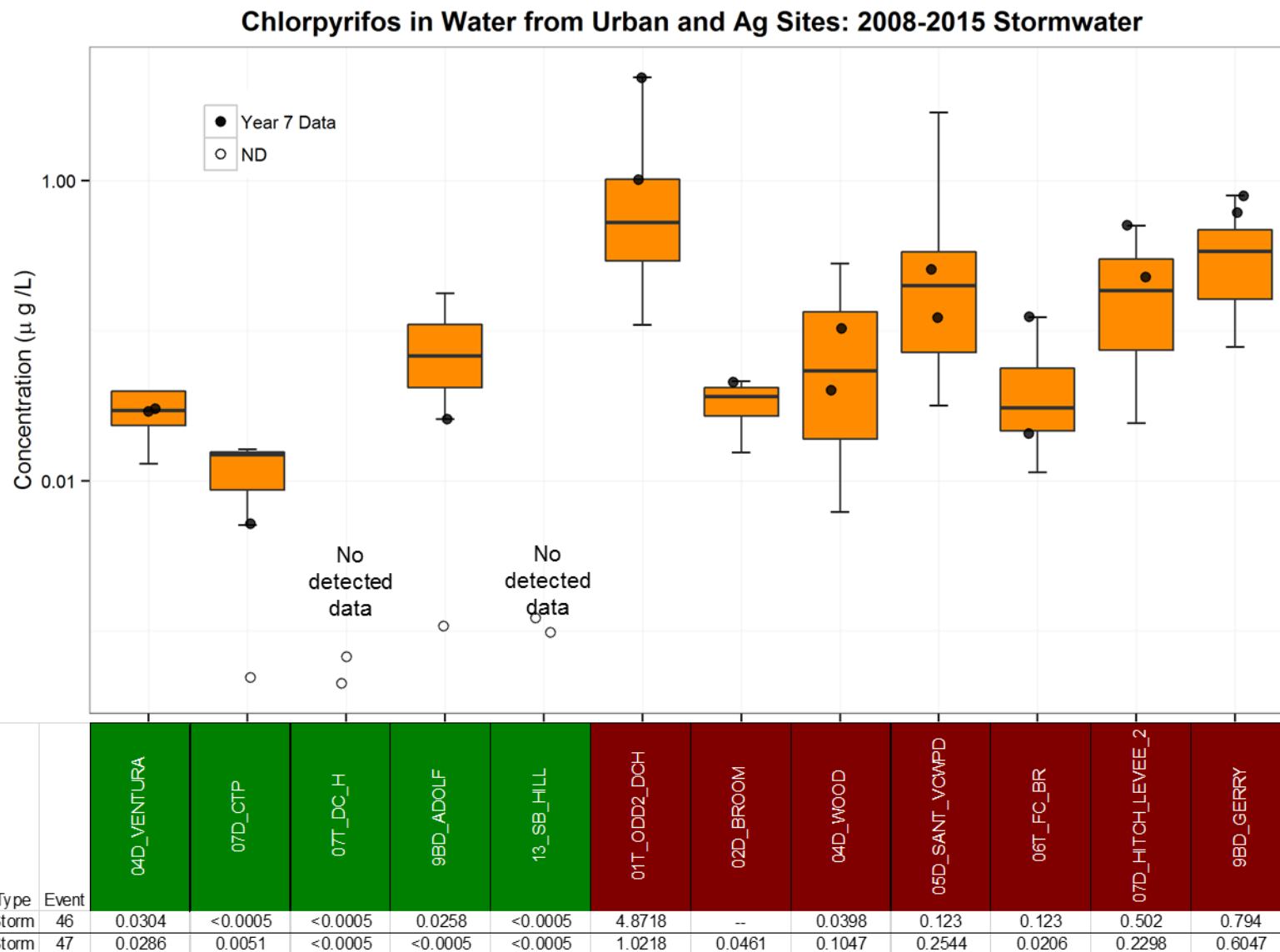
**Figure 46. Chlorpyrifos Stormwater Concentrations in Receiving Water Sites: 2008-2015**

Chlorpyrifos in Water from Urban, Ag, & POTW Sites: 2008-2015 Dry Weather



			04D_VENTURA	07D_CTP	07T_DC_H	98D_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCMPD	06T_FC_BR	07D_HITCH_LEVEE_2	98D_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Date	Type	Event															
Aug-14	Dry	44	<0.0005	0.0036	<0.0005	<0.0005	<0.0005	0.0029	--	--	0.0079	--	0.0911	--	0.0017	<0.0005	--
Nov-14	Dry	45	0.0086	0.003	<0.0005	0.0074	<0.0005	0.0059	--	0.0281	0.0922	--	--	--	<0.0005	<0.0005	--
Feb-15	Dry	48	<0.0005	<0.0005	<0.0005	0.0025	<0.0005	0.0206	--	0.0153	<0.0005	0.0083	--	--	<0.0005	<0.0005	--
May-15	Dry	49	<0.0005	0.0006	<0.0005	0.0024	<0.0005	0.002	--	0.0079	0.0065	--	--	--	<0.0005	0.0008	--

Figure 47. Chlorpyrifos Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2015



**Figure 48. Chlorpyrifos Stormwater Concentrations in Urban and Ag Sites: 2008-2015**

### Diazinon in Receiving Water Sites: 2008-2015 Dry Weather

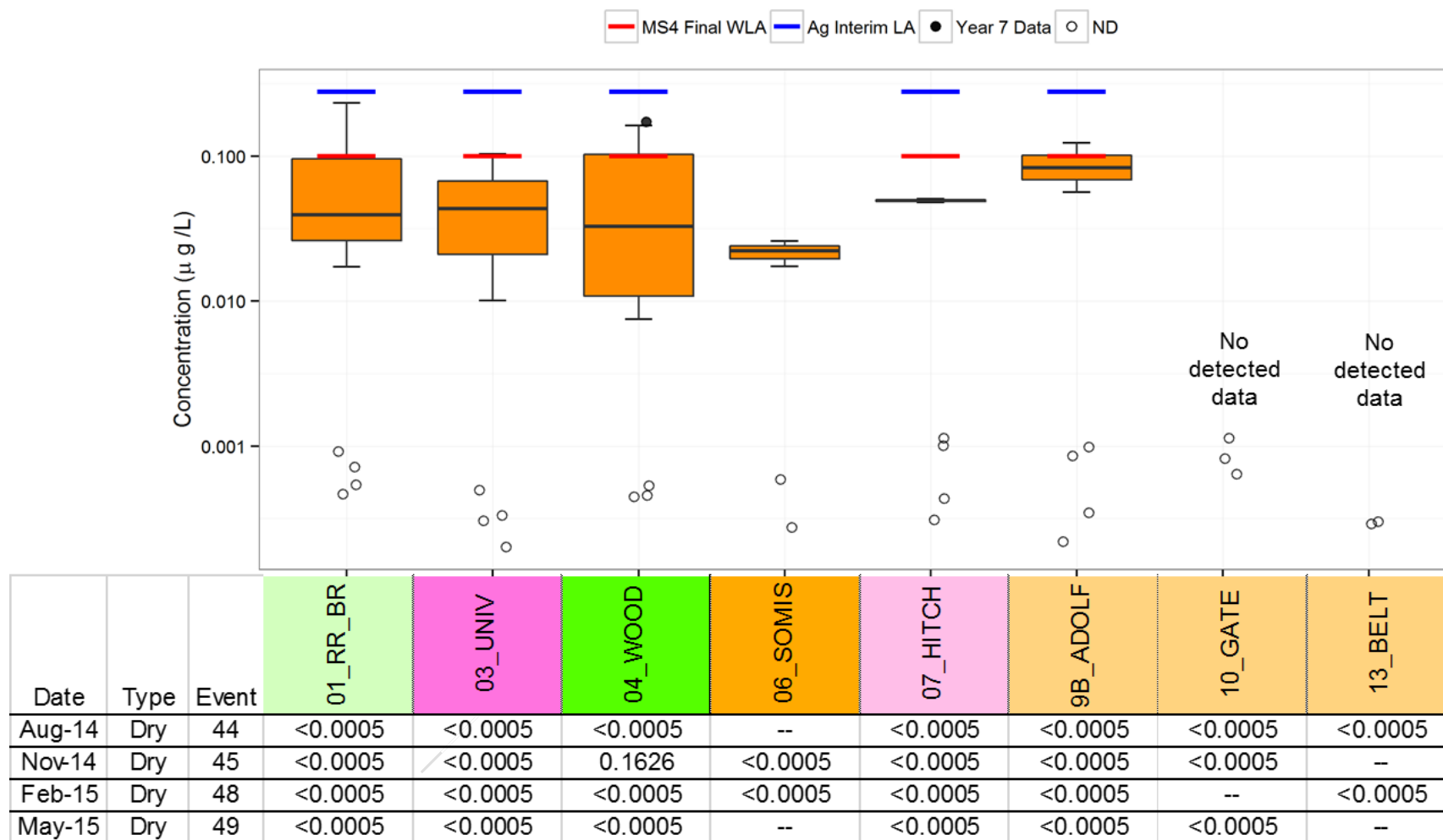
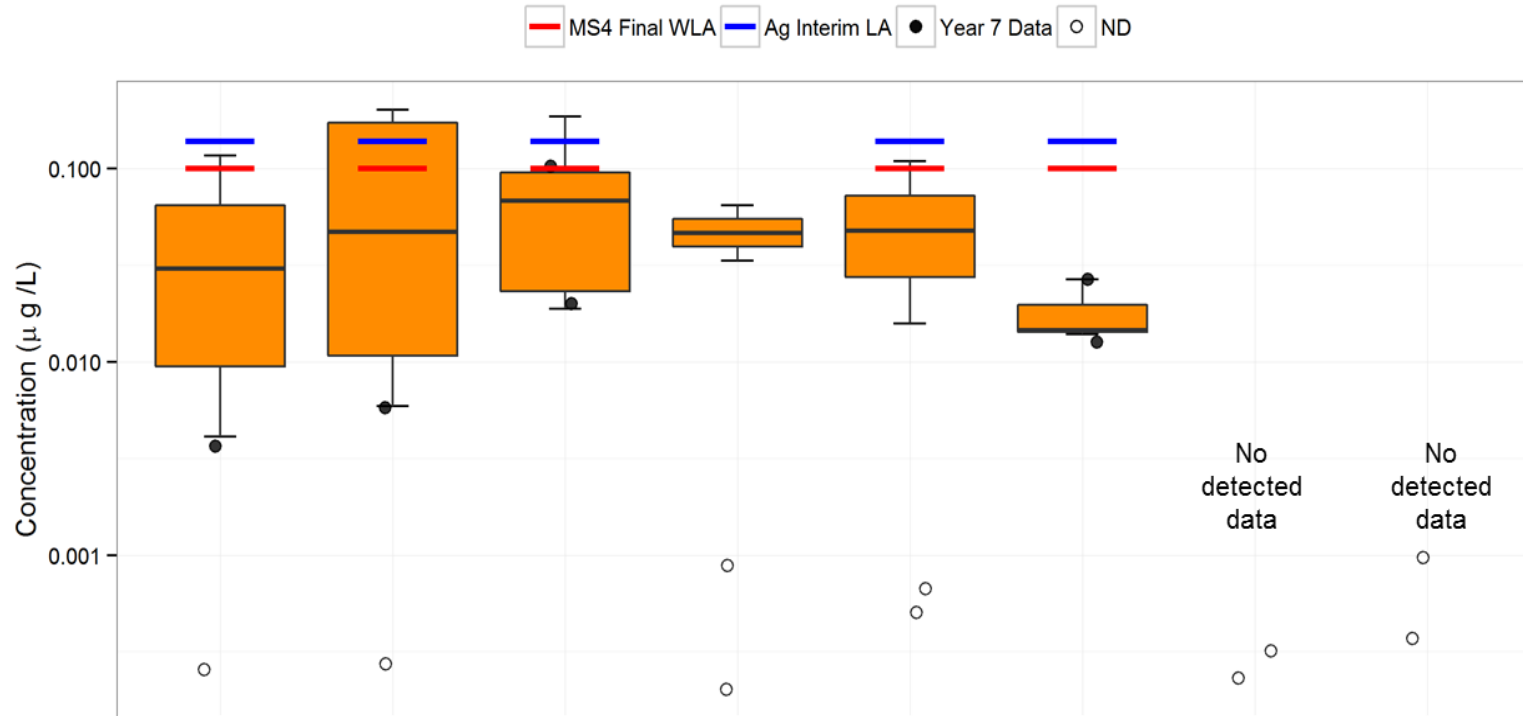


Figure 49. Diazinon Dry Weather Concentrations in Receiving Water Sites: 2008-2015

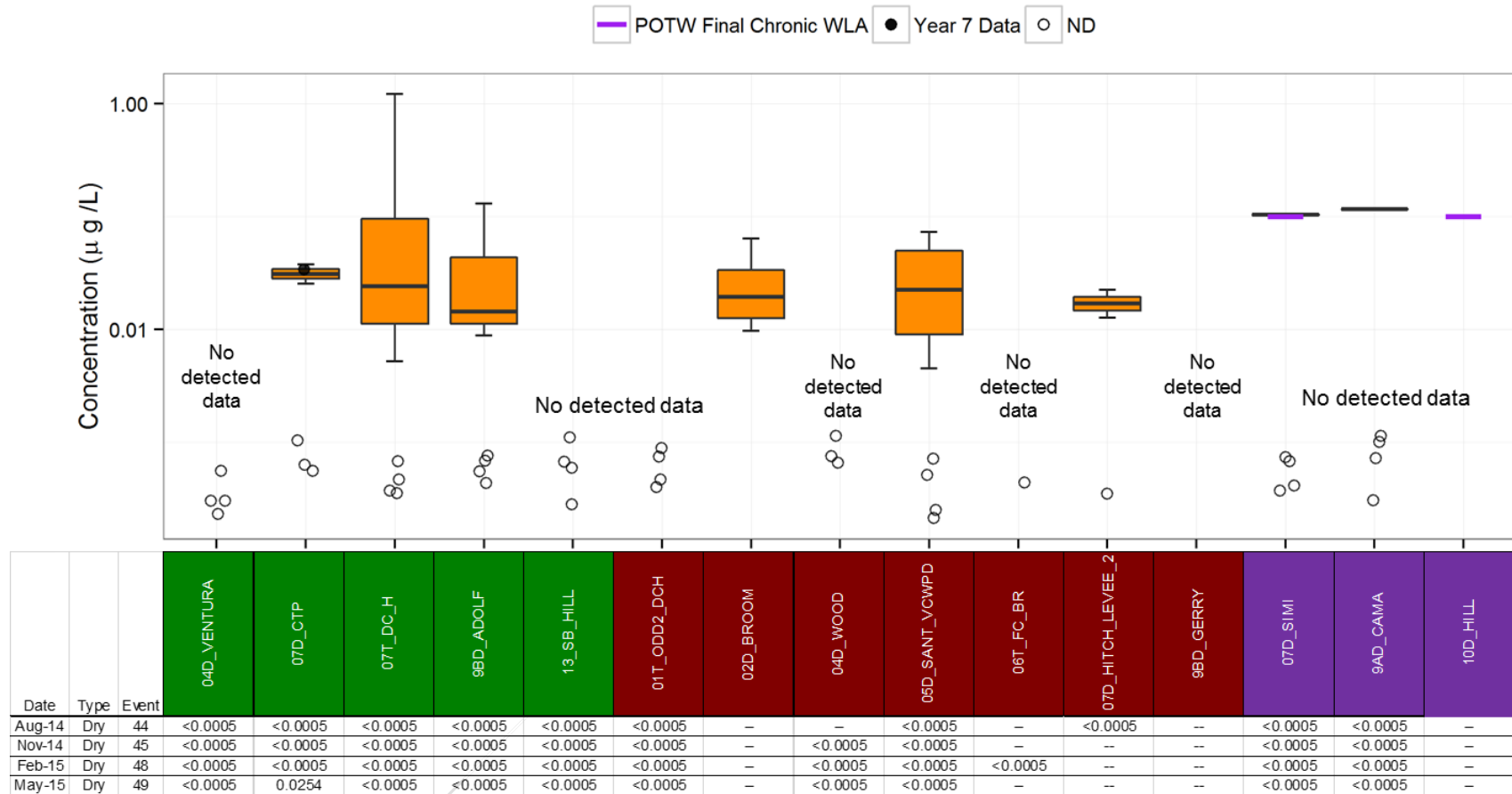
### Diazinon in Receiving Water Sites: 2008-2015 Stormwater



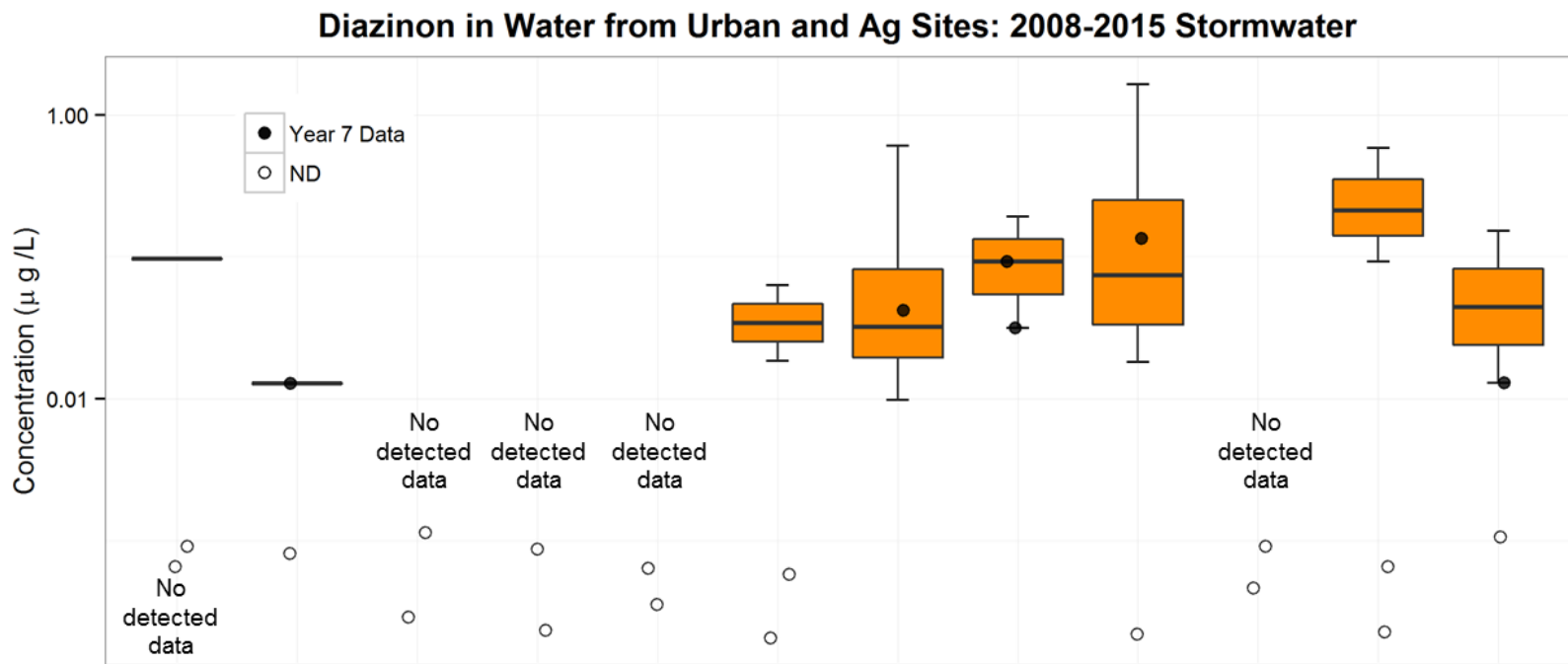
Date	Type	Event	01_RR_BR	03_UNIV	04_WOOD	06_SOMIS	07_HITCH	9B_ADOLF	10_GATE	13_BELT
Dec-14	Storm	46	0.0041	0.0059	0.0188	<0.0005	<0.0005	0.0267	0.0005	<0.0005
Dec-14	Storm	47	<0.0005	<0.0005	0.0956	<0.0005	<0.0005	0.0139	<0.0005	<0.0005

Figure 50. Diazinon Stormwater Concentrations in Receiving Water Sites: 2008-2015

## Diazinon in Water from Urban, Ag, & POTW Sites: 2008-2015 Dry Weather



**Figure 51. Diazinon Dry Weather Concentrations in Urban, Ag, and POTW Sites: 2008-2015**



Date	Type	Event	04D_VENTURA	07D_CTP	07T_DC_H	9BD_ADOLF	13_SB_HILL	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY
Dec-14	Storm	46	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	--	0.0316	<0.0005	<0.0005	<0.0005	0.0129
Dec-14	Storm	47	<0.0005	0.0128	<0.0005	<0.0005	<0.0005	<0.0005	0.0419	0.0925	0.1346	<0.0005	<0.0005	<0.0005

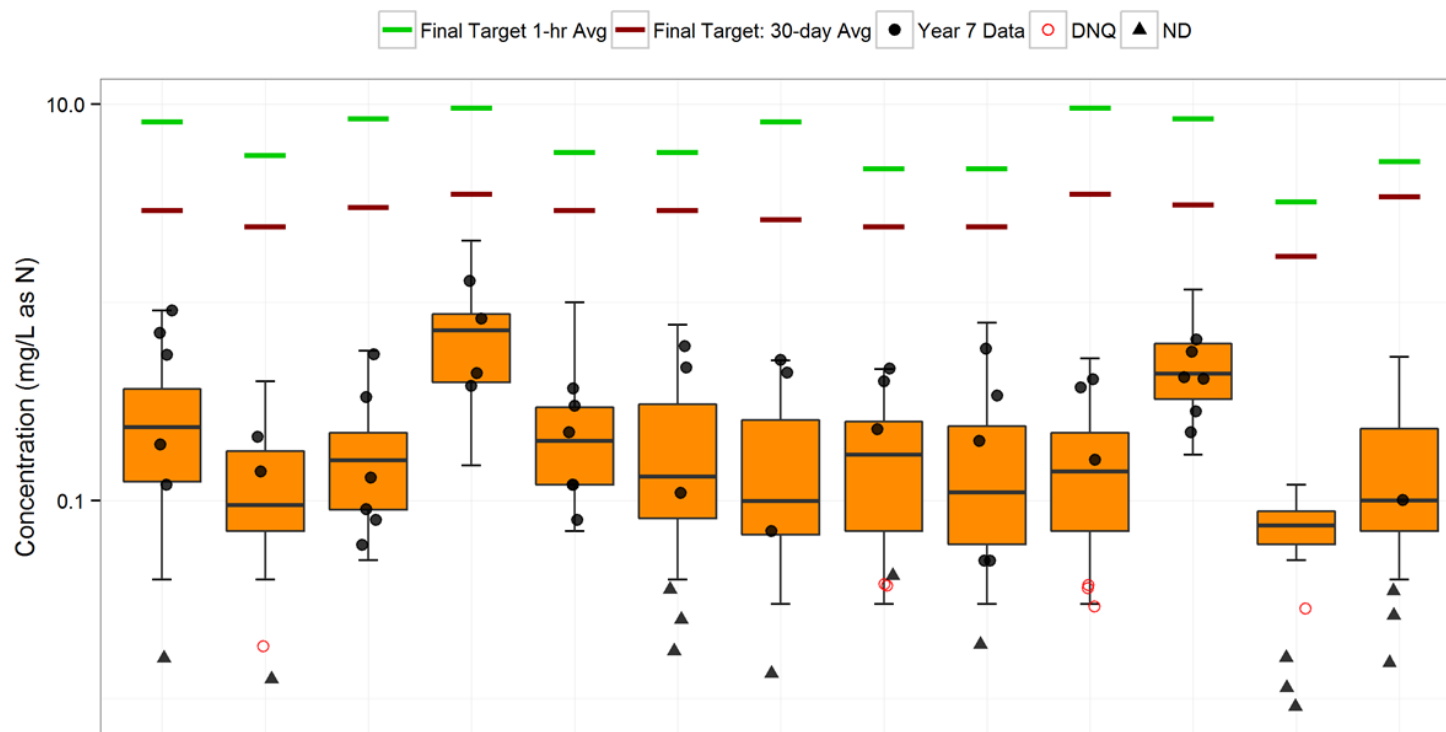
Figure 52. Diazinon Stormwater Concentrations in Urban and Ag Sites: 2008-2015

## NUTRIENTS TMDL

Final targets and allocations are effective for the Nutrients TMDL. The applicable targets for each monitoring site are presented in the figures below. Bolded values in the tables within each figure indicate the concentration was above the applicable limits for that constituent. Italicized values in the tables within each figure indicate the concentration was DNQ. Values in the tables within each figure with a “<” preceding them, indicate the constituent was ND at the MDL for that constituent.



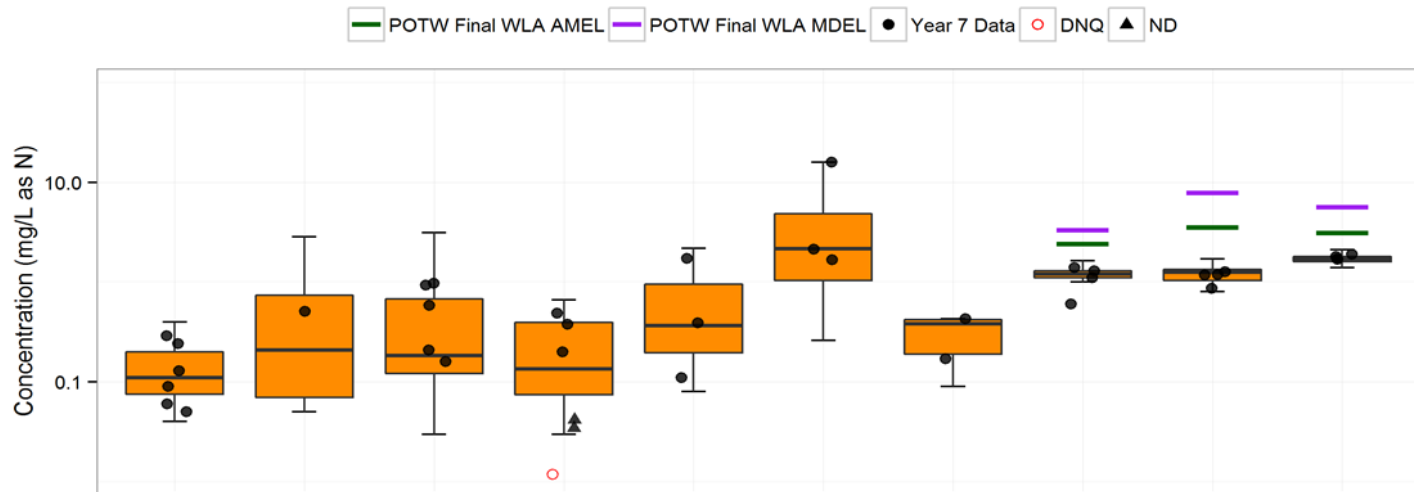
### Ammonia N in Receiving Water Sites: 2008-2015



Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	05_CENTR	06_SOMIS	07_HITCH	07_MADER	9B_ADOLF	10_GATE	12_PARK	13_BELT
Aug-14	Dry	44	0.19	<0.02	0.06	0.83	0.12	<0.02	–	0.23	<0.02	0.04	0.22	<0.02	<0.02
Nov-14	Dry	45	0.7	0.21	0.09	1.28	0.22	0.11	0.07	0.04	0.2	0.16	0.65	0.03	0.1
Dec-14	Stom	46	0.54	–	0.33	–	0.37	0.47	0.44	0.4	0.58	0.37	0.42	–	–
Dec-14	Stom	47	0.91	–	0.55	–	0.3	0.6	0.51	0.46	0.34	0.41	0.28	–	–
Feb-15	Dry	48	<0.02	0.02	0.13	0.44	0.08	<0.02	<0.02	<0.02	0.05	0.03	0.56	<0.02	<0.02
May-15	Dry	49	0.12	0.14	0.08	0.38	0.12	<0.02	–	0.04	0.05	0.04	0.41	<0.02	<0.02

Figure 53. Ammonia-N Concentrations in Receiving Water Sites: 2008-2015

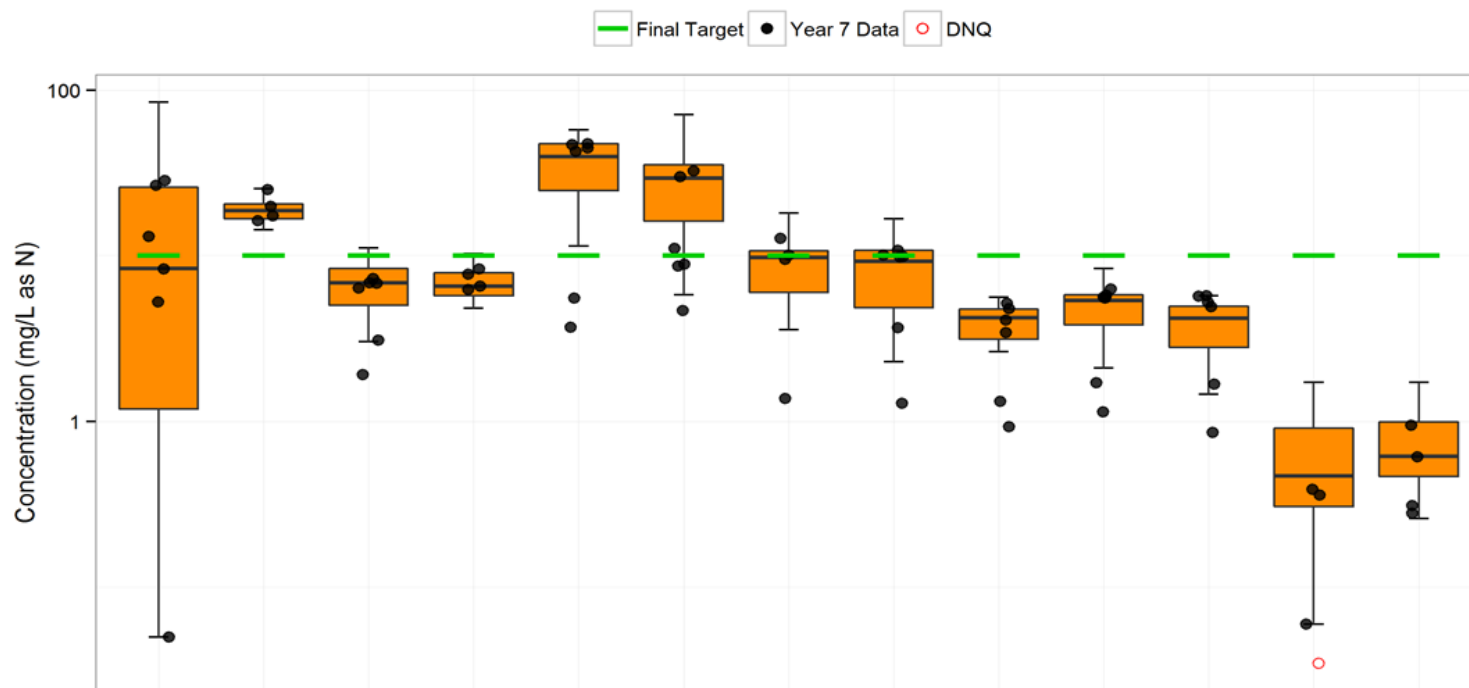
### Ammonia N in Water from Ag & POTW Sites: 2008-2015



Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-14	Dry	44	0.06	--	--	<0.02	--	15.9	--	1.3	1.18	1.8
Nov-14	Dry	45	0.05	--	0.97	0.2	--	--	--	1.1	1.19	1.9
Dec-14	Storm	46	0.29	--	0.93	0.49	0.39	2.14	0.43	--	--	--
Dec-14	Storm	47	0.24	0.51	0.58	0.38	1.72	1.66	0.17	--	--	--
Feb-15	Dry	48	0.13	--	0.16	<0.02	0.11	--	--	0.6	1.27	1.7
May-15	Dry	49	0.09	--	0.21	0.02	--	--	--	1.4	0.87	1.7

Figure 54. Ammonia-N Concentrations in Ag and POTW Sites: 2008-2015

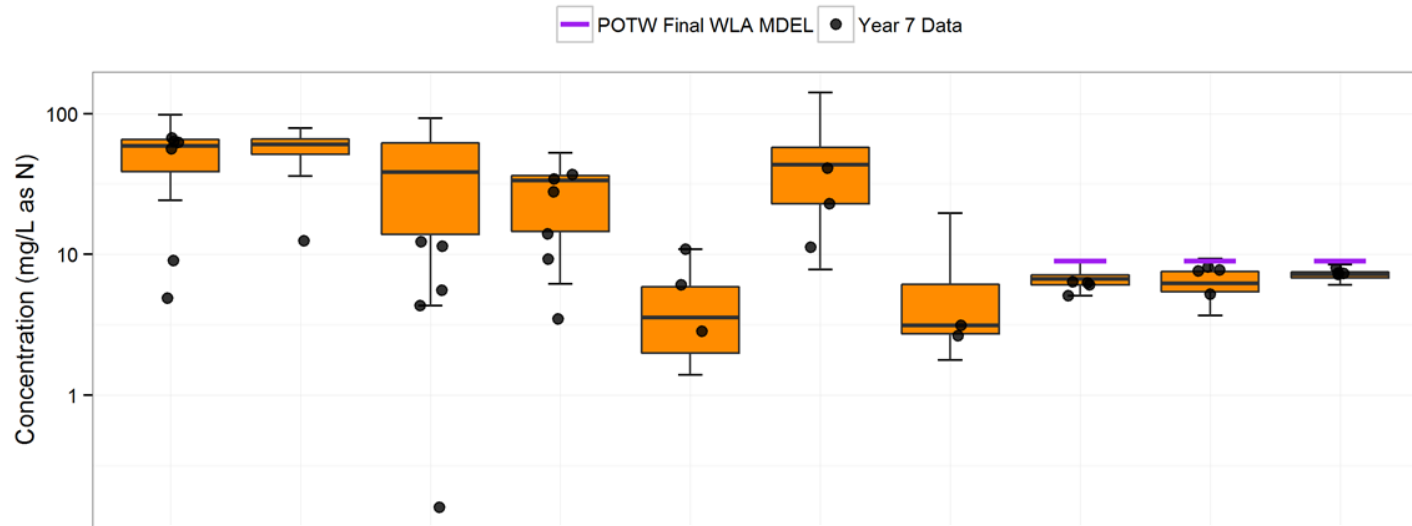
### Nitrate-N in Receiving Water Sites: 2008-2015



Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	9A_HOWAR	04_WOOD	05_CENTR	06_SOMIS	07_HITCH	07_MADER	9B_ADOLF	10_GATE	12_PARK	13_BELT
Aug-14	Dry	44	8.35	25.02	6.82	7.73	46.9	32.4	--	10.09	4.1	5.63	5.69	<0.02	0.31
Nov-14	Dry	45	26.65	19.87	7.31	8.31	47.33	8.68	12.72	9.86	4.79	6.29	5.75	0.39	0.95
Dec-14	Storm	46	28.51	--	3.1	--	5.56	8.89	9.49	3.67	0.93	1.14	0.86	--	--
Dec-14	Storm	47	5.25	--	1.92	--	3.71	4.68	1.38	1.29	1.32	1.71	1.68	--	--
Feb-15	Dry	48	0.05	17.36	6.4	6.25	42.65	11.08	10.1	10.77	3.44	5.56	4.94	0.36	0.61
May-15	Dry	49	13.11	16.23	6.84	6.54	44.6	29.9	--	9.92	5.15	5.76	5.24	0.06	0.28

Figure 55. Nitrate-N Concentrations in Receiving Water Sites: 2008-2015

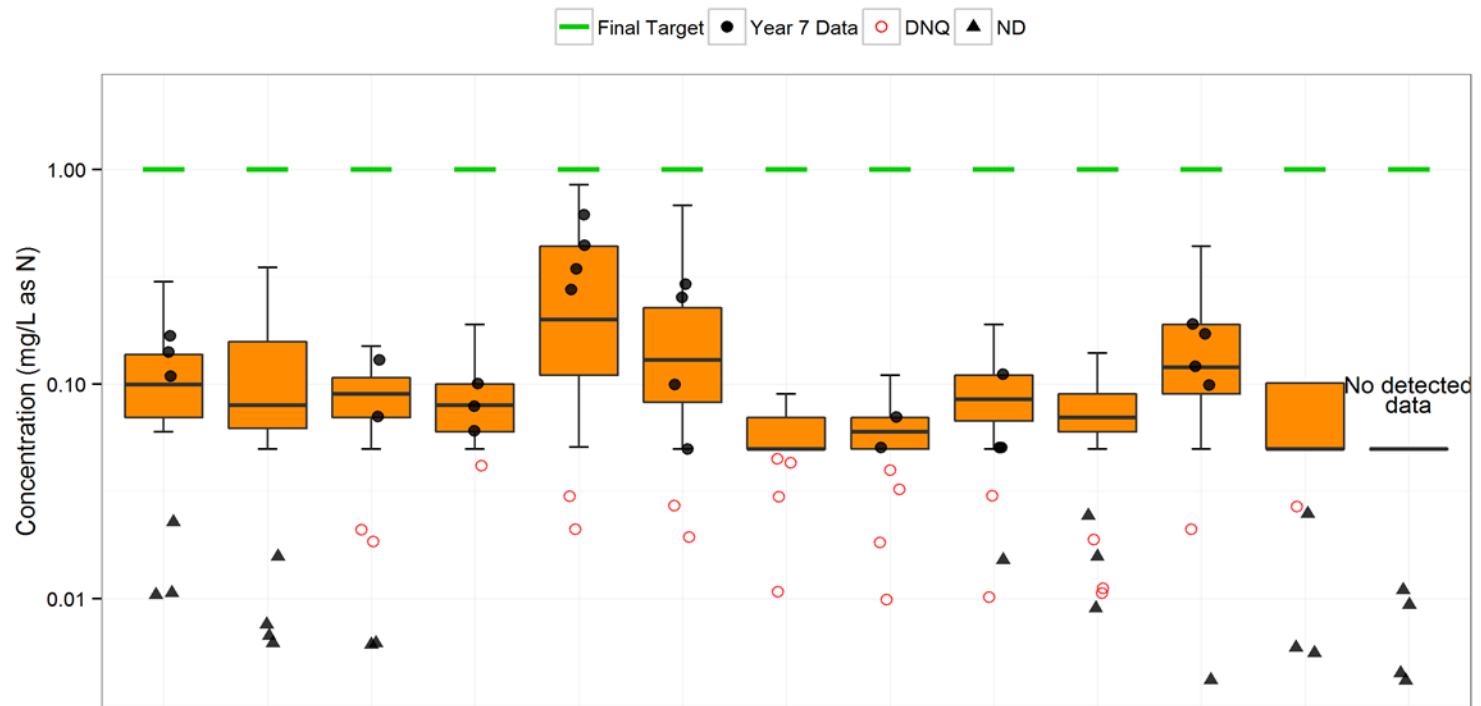
### Nitrate-N in Water from Ag & POTW Sites: 2008-2015



			01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Date	Type	Event										
Aug-14	Dry	44	62.5	--	--	27.75	--	41.16	--	6.4	8.13	7.2
Nov-14	Dry	45	63.18	--	5.56	34.28	--	--	--	5.1	7.6	7.3
Dec-14	Stom	46	9.04	--	12.25	13.97	10.87	22.86	3.14	--	--	--
Dec-14	Stom	47	4.9	12.5	11.45	3.47	2.85	11.27	2.64	--	--	--
Feb-15	Dry	48	56.25	--	4.34	9.23	6.09	--	--	6.1	5.23	8
May-15	Dry	49	66.95	--	0.16	36.96	--	--	--	6.3	7.74	7.4

Figure 56. Nitrate-N Concentrations in Ag and POTW Sites: 2008-2015

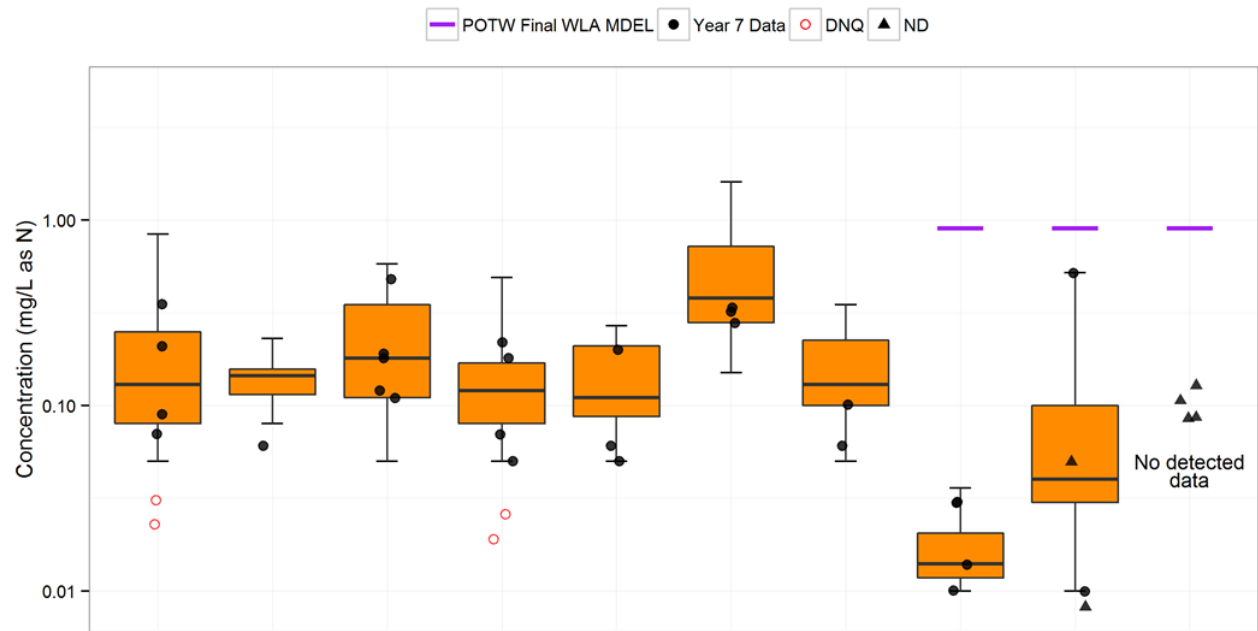
### Nitrite as N in Receiving Water Sites: 2008-2015



Date	Type	Event	01_RR_BR	02_PCH	03_UNIV	04_HOWAR	04_WOOD	05_CENTR	06_SOMIS	07_HITCH	07_MADER	09B_ADOLF	10_GATE	12_PARK	13_BELT
Aug-14	Dry	44	0.17	<0.01	<0.01	0.08	0.61	0.29	--	0.07	<0.01	<0.01	0.17	<0.01	<0.01
Nov-14	Dry	45	0.11	<0.01	0.13	0.1	0.28	0.05	0.03	0.03	0.05	0.02	0.19	<0.01	<0.01
Dec-14	Storm	46	<0.01	--	0.02	--	0.02	0.02	0.04	0.02	0.03	0.01	0.02	--	--
Dec-14	Storm	47	<0.01	--	0.02	--	0.03	0.03	0.01	0.01	0.01	0.01	<0.01	--	--
Feb-15	Dry	48	<0.01	<0.01	0.07	0.04	0.34	0.1	0.04	0.04	0.05	<0.01	0.12	0.03	<0.01
May-15	Dry	49	0.14	<0.01	<0.01	0.06	0.44	0.25	--	0.05	0.11	<0.01	0.1	<0.01	<0.01

Figure 57. Nitrite-N Concentrations in Receiving Water Sites: 2008-2015

### Nitrite as N in Water from Ag & POTW Sites: 2008-2015



Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	07D_HITCH_LEVEE_2	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-14	Dry	44	0.21	--	--	0.18	--	0.32	--	0.014	<0.01	<0.1
Nov-14	Dry	45	0.07	--	0.48	0.07	--	--	--	0.03	0.52	<0.1
Dec-14	Storm	46	0.03	--	0.18	0.02	0.05	0.34	0.1	--	--	--
Dec-14	Storm	47	0.02	0.06	0.11	0.03	0.06	0.28	0.06	--	--	--
Feb-15	Dry	48	0.09	--	0.19	0.05	0.2	--	--	0.01	0.05	<0.1
May-15	Dry	49	0.35	--	0.12	0.22	--	--	--	0.03	<0.01	<0.1

Figure 58. Nitrite-N Concentrations in Ag and POTW Sites: 2008-2015

### Nitrate-N + Nitrite-N in Receiving Water Sites: 2008-2015

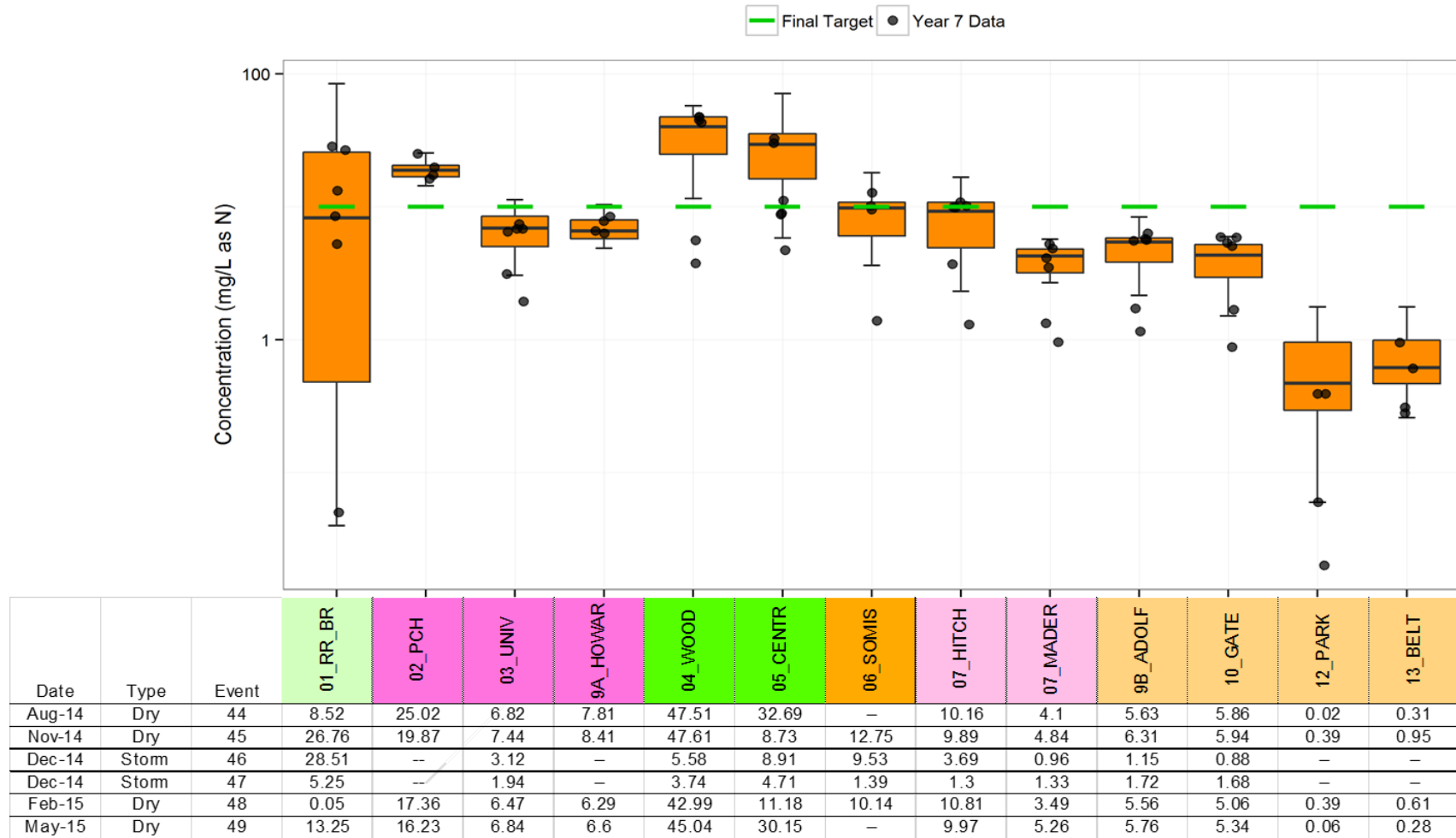
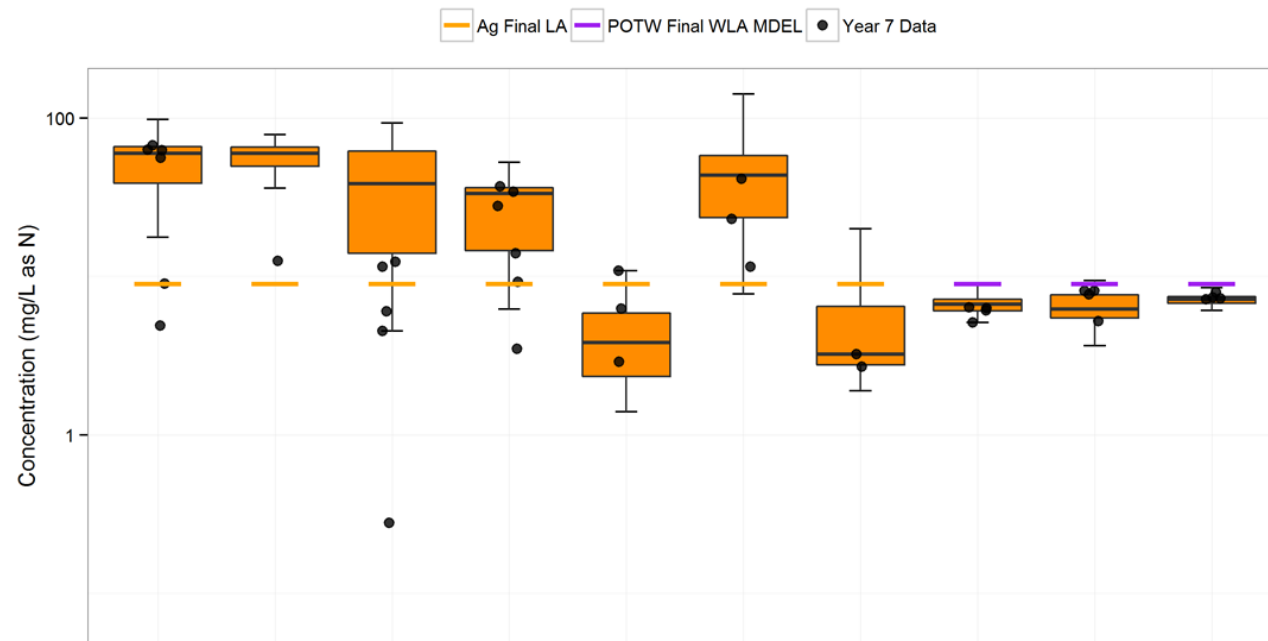


Figure 59. Nitrate-N + Nitrite-N Concentrations in Receiving Water Sites: 2008-2015

**Nitrate-N + Nitrite-N in Water from Ag & POTW Sites: 2008-2015**

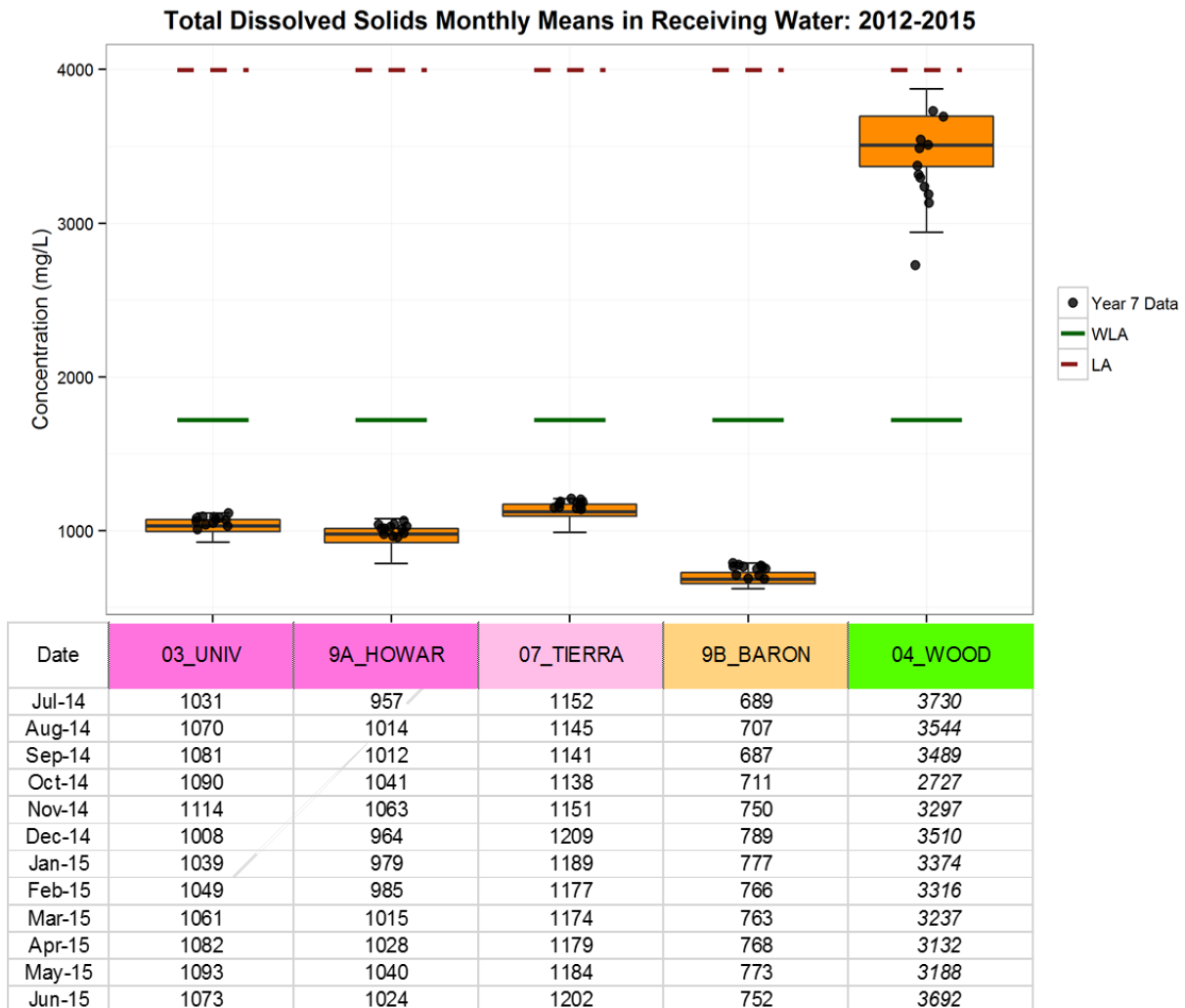


Date	Type	Event	01T_ODD2_DCH	02D_BROOM	04D_WOOD	05D_SANT_VCWPD	06T_FC_BR	9BD_GERRY	07D_SIMI	9AD_CAMA	10D_HILL
Aug-14	Dry	44	62.71	--	--	27.93	--	--	6.414	8.12	7.2
Nov-14	Dry	45	63.25	--	6.04	34.35	--	--	5.13	8.12	7.3
Dec-14	Stom	46	9.04	--	12.43	13.99	10.92	3.24	--	--	--
Dec-14	Stom	47	4.9	12.56	11.56	3.5	2.91	2.7	--	--	--
Feb-15	Dry	48	56.34	--	4.53	9.28	6.29	--	6.11	5.23	8
May-15	Dry	49	67.3	--	0.28	37.18	--	--	6.33	7.74	7.4

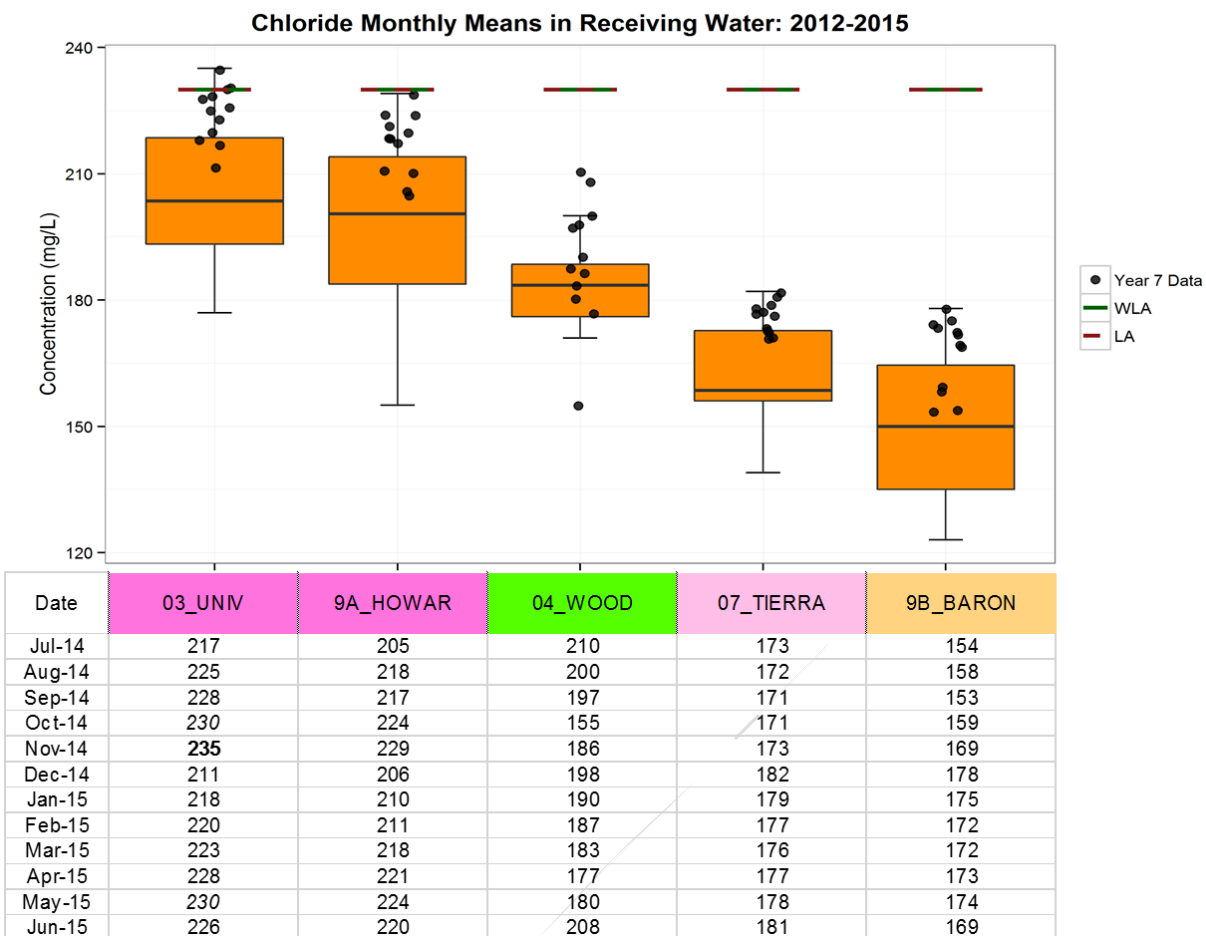
**Figure 60. Nitrate-N + Nitrite-N Concentrations in Ag and POTW Sites: 2008-2015**

## SALTS TMDL

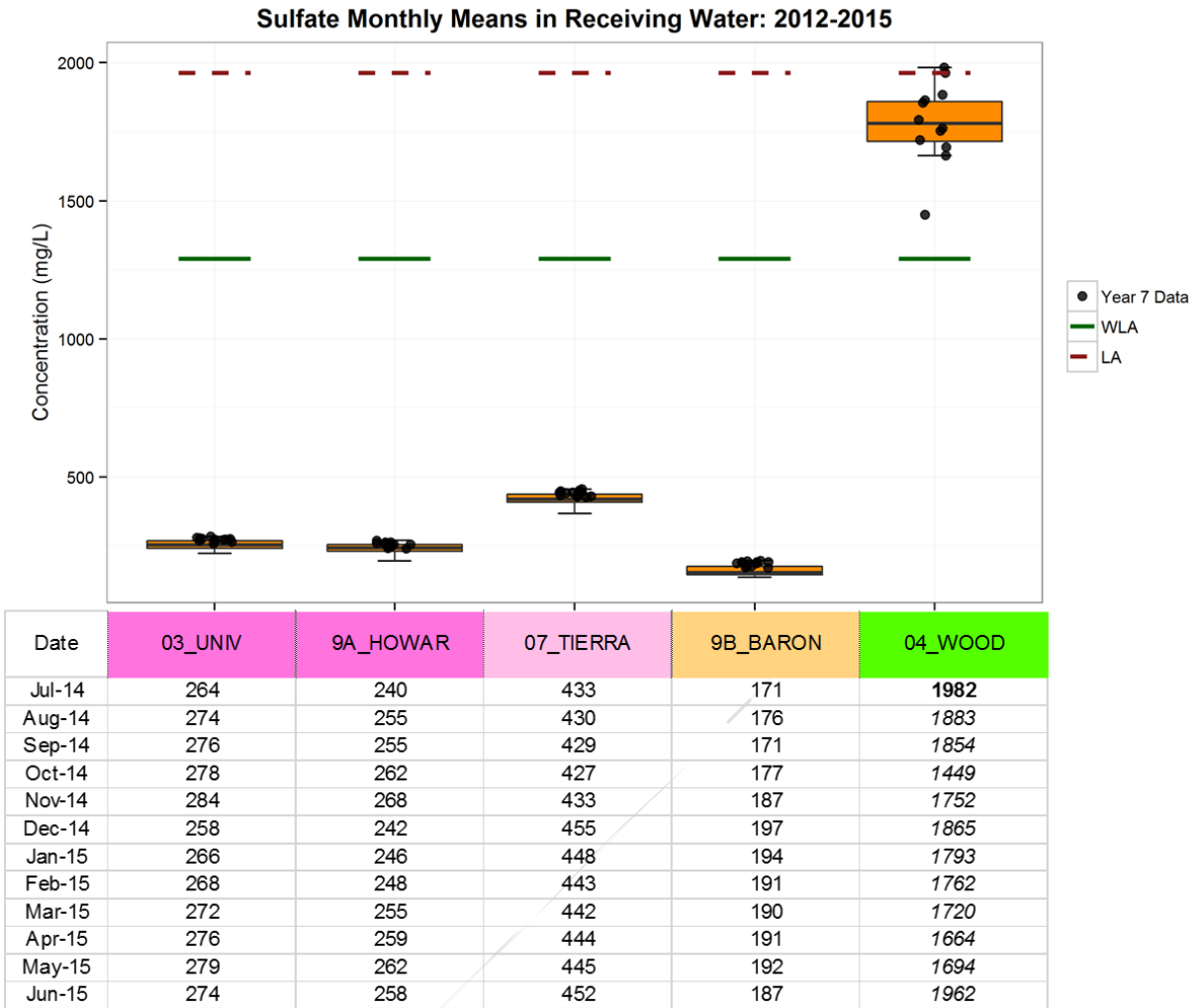
For the Salts TMDL, compliance with interim dry weather salt allocations is determined using monthly mean salt concentrations for dry weather developed from the time-series of data collected at receiving water sites. Bolded values in the tables within each figure indicate the concentration was above the interim MS4 WLA and the interim LA for that constituent. *Italicized values in the tables within each figure indicate the concentration was above the interim MS4 WLA for that constituent.*



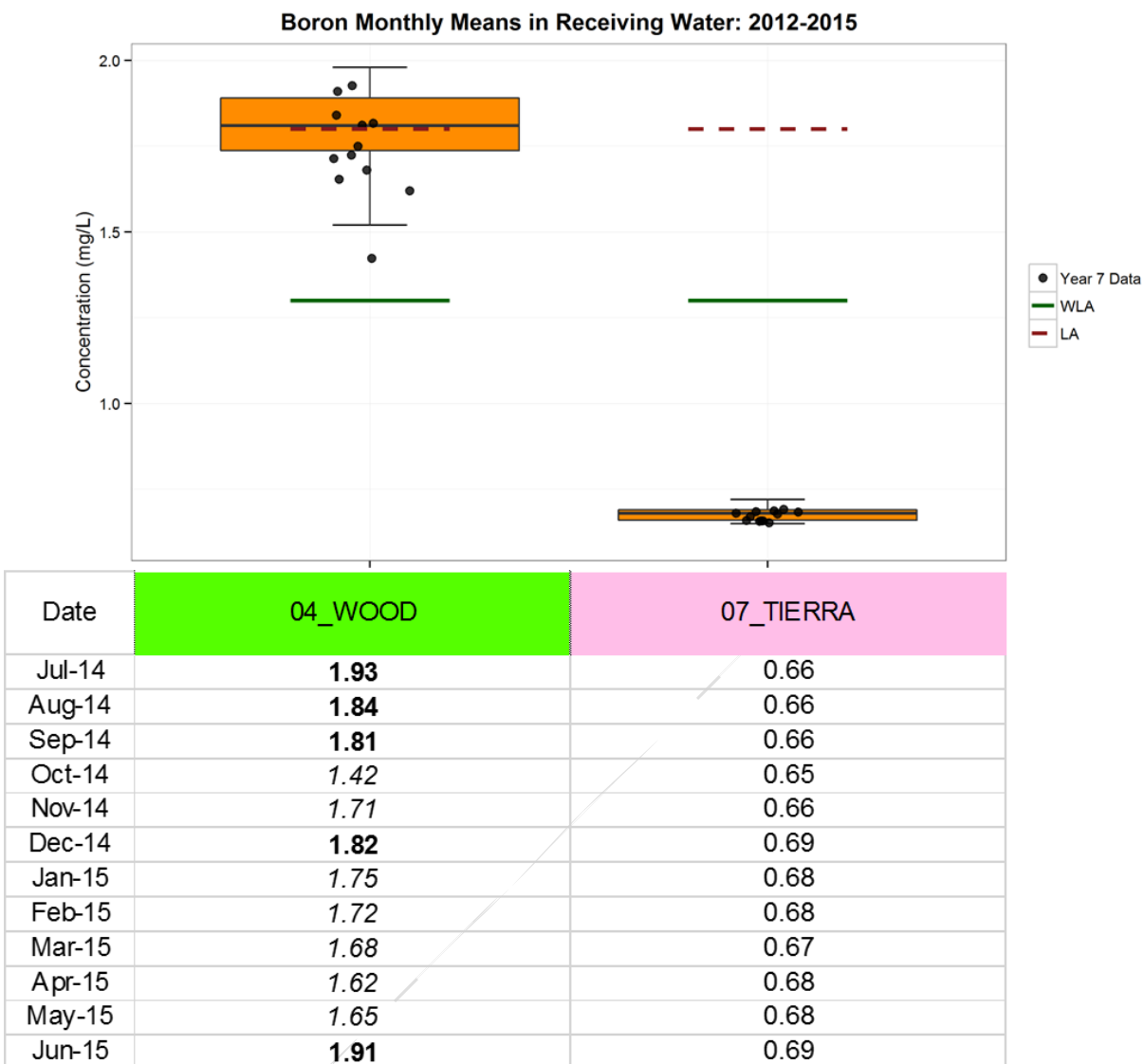
**Figure 61. TDS Monthly Means for Receiving Water Sites Collected During Dry Weather**



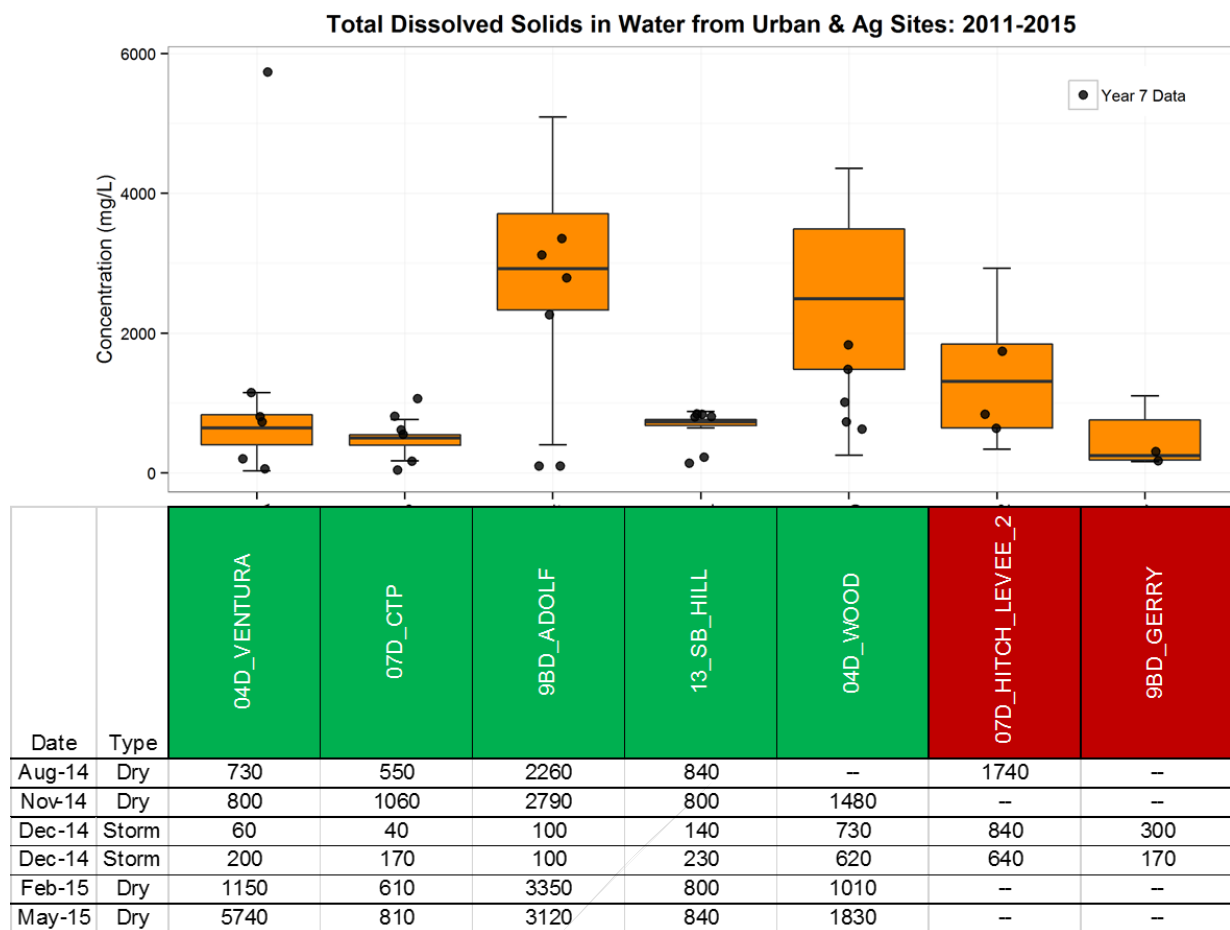
**Figure 62. Chloride Monthly Means for Receiving Water Sites Collected During Dry Weather**



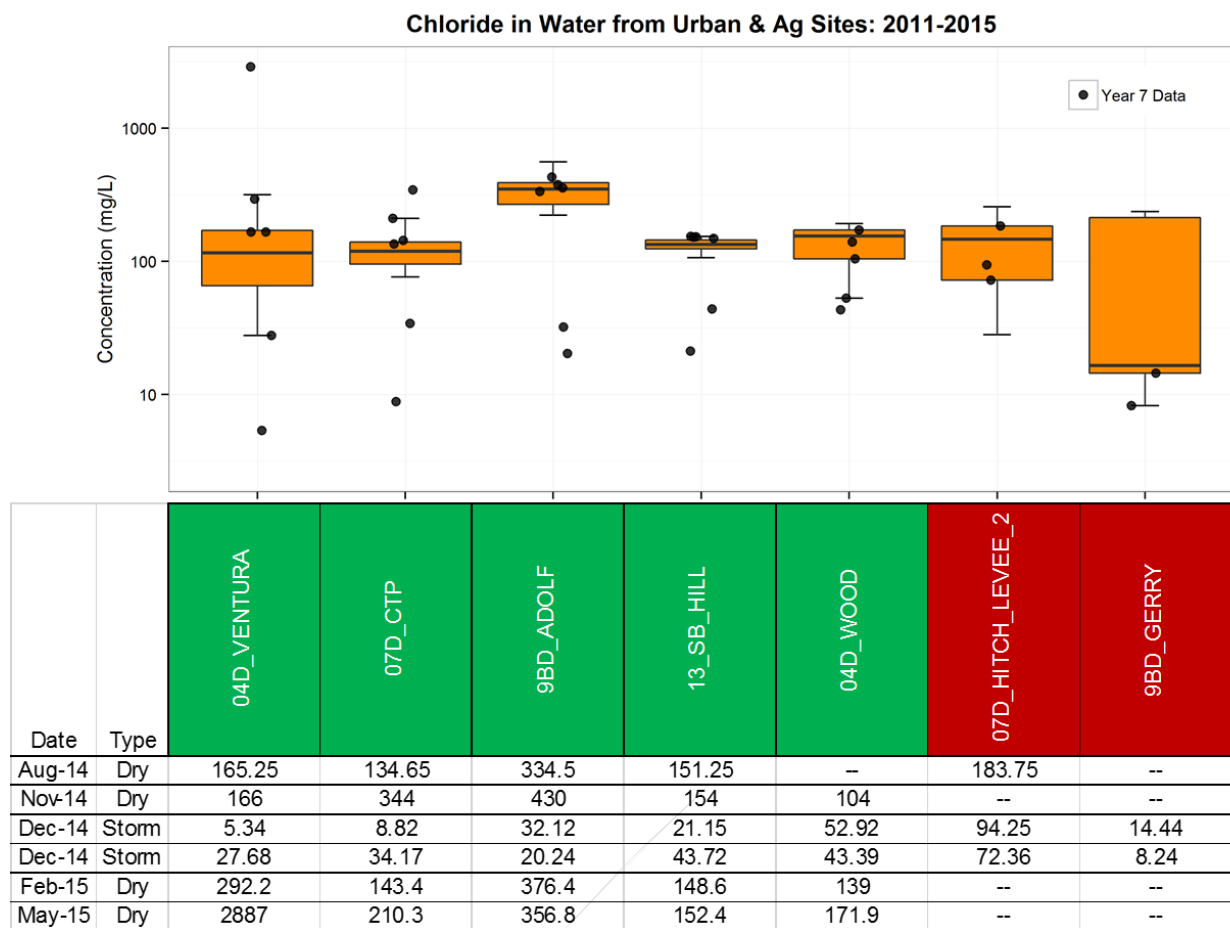
**Figure 63. Sulfate Monthly Means for Receiving Water Sites Collected During Dry Weather**



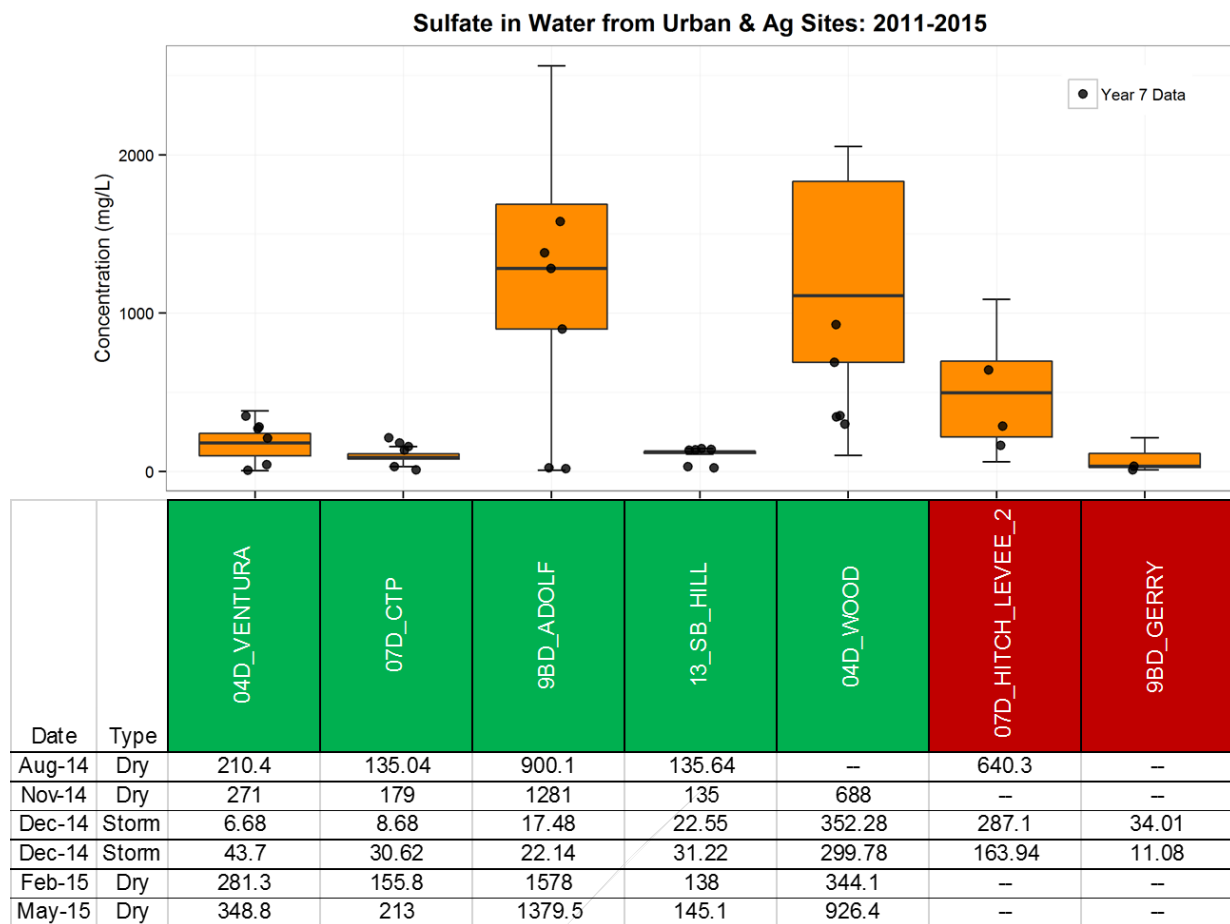
**Figure 64. Boron Monthly Means for Receiving Water Sites Collected During Dry Weather**



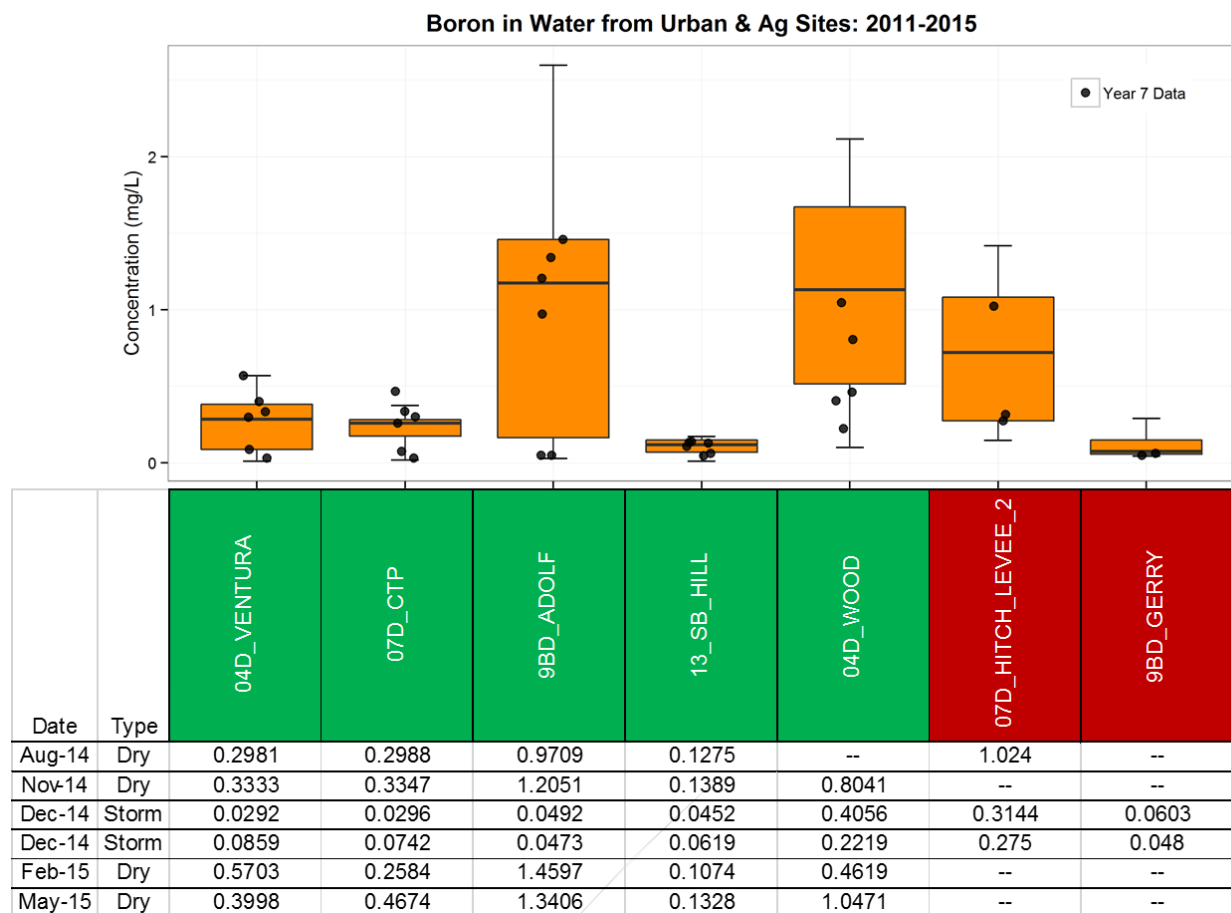
**Figure 65. Total Dissolved Solids in Water from Urban and Ag Sites: 2011-2015**



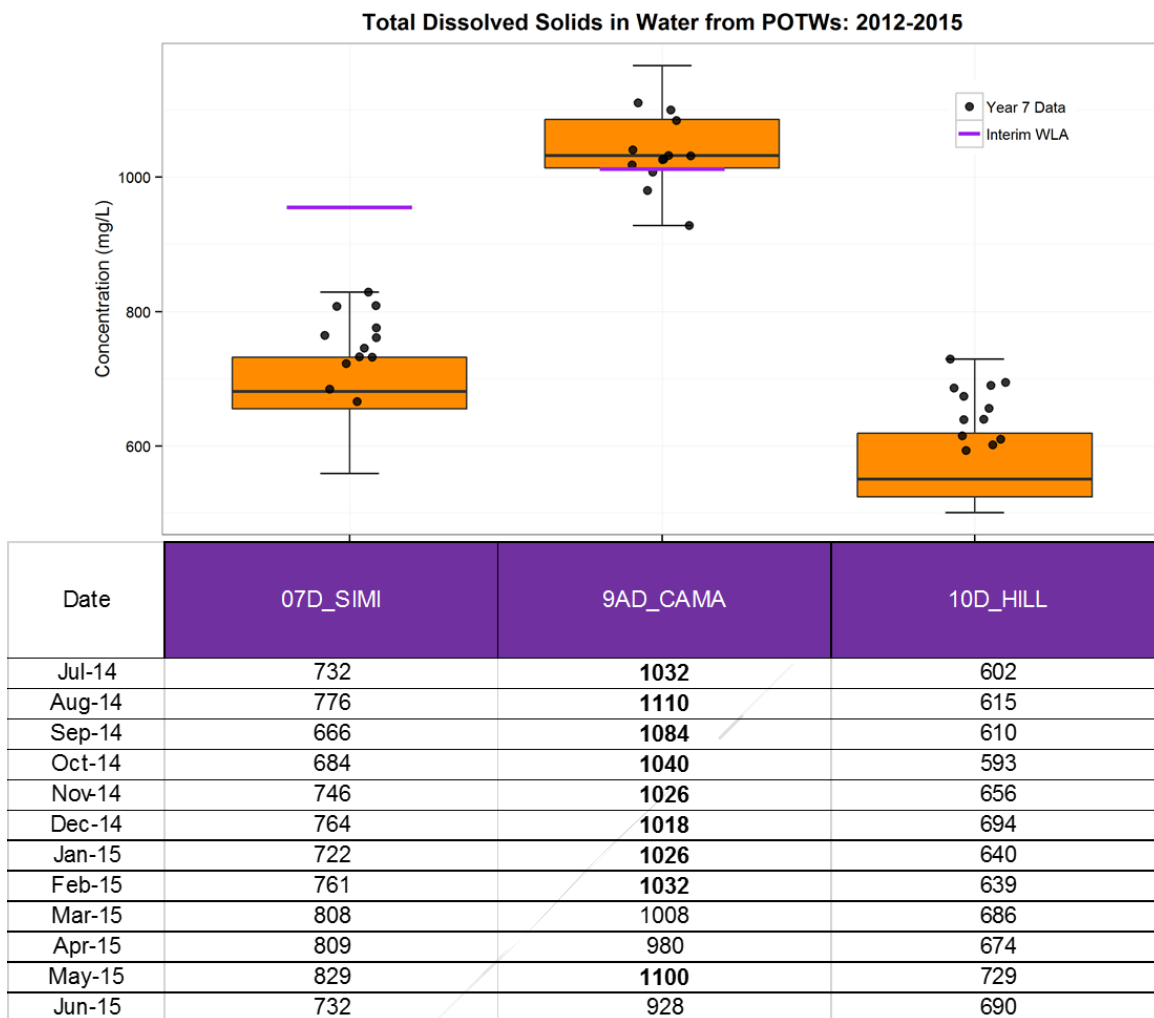
**Figure 66. Chloride in Water from Urban & Ag Sites: 2011-2015**



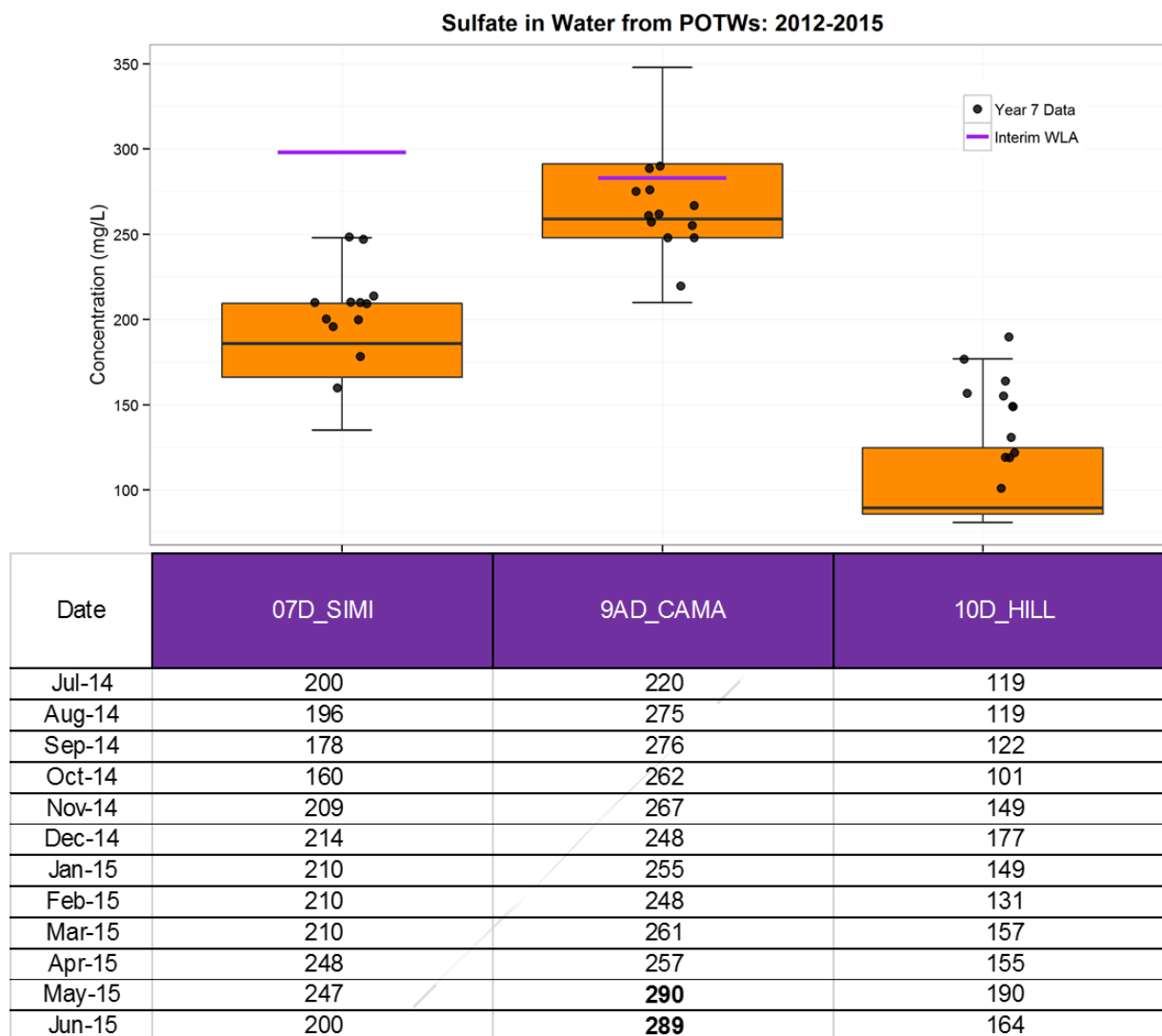
**Figure 67. Sulfate in Water from Urban & Ag Sites: 2011-2015**



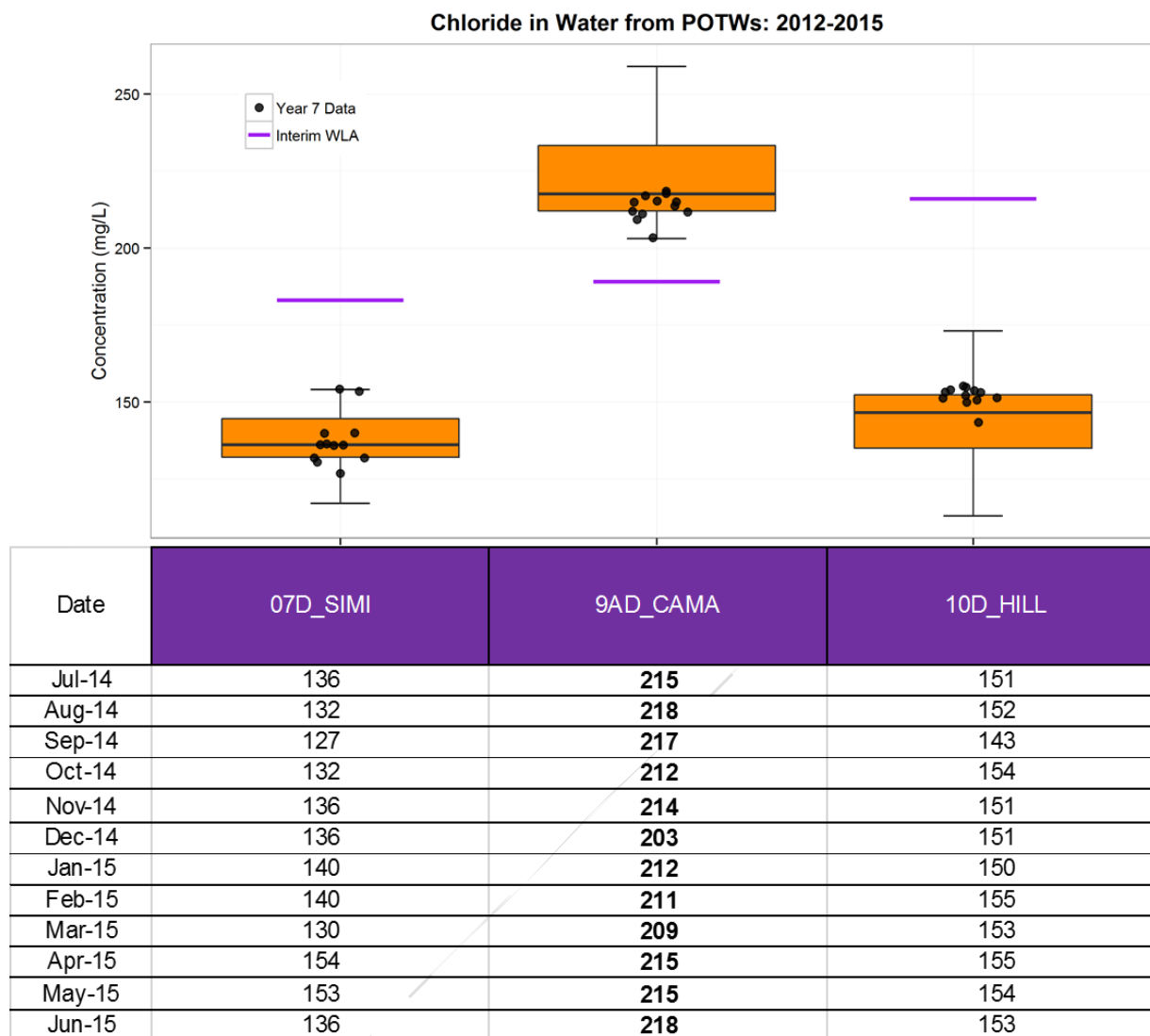
**Figure 68. Boron in Water from Urban & Ag Sites: 2011-2015**



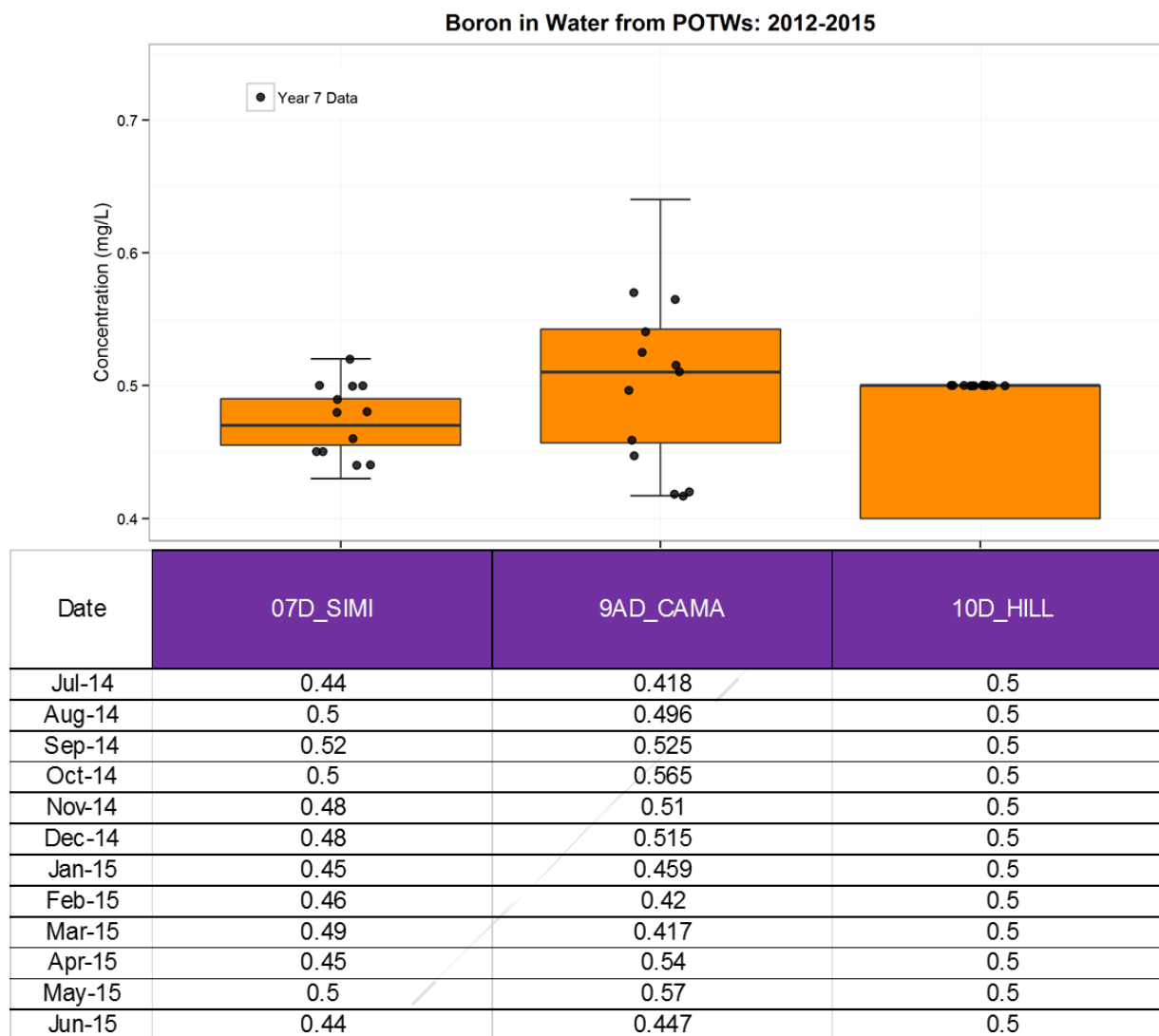
**Figure 69. TDS in Water from POTW Sites: 2012-2015**



**Figure 70. Sulfate in Water from POTW Sites: 2012-2015**



**Figure 71. Chloride in Water from POTW Sites: 2012-2015**



**Figure 72. Boron in Water from POTW Sites: 2012-2015**

## TISSUE DATA

Tissue data is provided in the following tables for both Mugu Lagoon and freshwater monitoring locations. Tissue samples are only collected in Mugu Lagoon every three years; therefore data from monitoring years one, four, and seven are reported. For all tables, only those constituents that have been detected in at least one sample are included.

### Mugu Lagoon Tissue Data

Table 9. Mugu Lagoon – Central Lagoon Tissue Data <sup>1</sup>

Date	Tissue Sample Type	Lipids Percent Lipids %	OC Pesticides									PCBs Arochlor 1254 ng/g	Metals	
			Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'- DDD ng/g	2,4'- DDE ng/g	2,4'- DDT ng/g	4,4'- DDD ng/g	4,4'- DDE ng/g	4,4'- DDT ng/g	Toxaphene ng/g		Total Mercury µg/g	Total Selenium µg/g
8/21/2008	Composite Mussel Sample	0.9	--	--	7.5	--	ND	13.4	125	ND	94.4	ND	ND	0.4
8/21/2008	Whole Fish Compo-site Top Smelt ( <i>Atherinops affinis</i> )	4.1	--	--	ND	--	11.7	20.9	406	41.7	294	ND	0.02	0.6
8/18/2011	Composite Mussel Sample	1.7	--	--	DNQ	--	9.4	ND	118	ND	DNQ	ND	0.0039	0.8
5/14/2015	Whole Fish Sample #1 Top Smelt ( <i>Atherinops affinis</i> )	6.3	8.3	DNQ	DNQ	DNQ	14.6	45.5	537.5	72.2	ND	ND	0.05	2.9
	Whole Fish Sample #2 Top Smelt ( <i>Atherinops affinis</i> )	7.6	DNQ	ND	DNQ	DNQ	15.2	31	435.9	24.8	ND	ND	0.05	1.9
	Whole Fish Sample #3 Top Smelt ( <i>Atherinops affinis</i> )	9.2	ND	ND	DNQ	ND	7.7	DNQ	74.1	ND	ND	ND	0.07	1.9

Date	Tissue Sample Type		Lipids	OC Pesticides									PCBs	Metals	
			Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Arochlor 1254	Total Mercury	Total Selenium
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	µg/g	µg/g
5/14/2015	Whole Fish Sample #4	Top Smelt ( <i>Atherinops affinis</i> )	6.4	39.1	18.2	9.2	22.3	32.5	300.3	3620.4	504.7	891.9	ND	0.07	4.4
	Whole Fish Sample #5	Top Smelt ( <i>Atherinops affinis</i> )	7.0	ND	ND	ND	DNQ	6.9	DNQ	109.4	DNQ	ND	ND	0.06	2.4
	Whole Fish Sample #6	Top Smelt ( <i>Atherinops affinis</i> )	6.5	5.2	DNQ	DNQ	DNQ	DNQ	44.1	536.7	51.3	92.1	ND	0.04	2.7
	Whole Fish Sample #7	Grass Rockfish ( <i>Sebastes rastrelliger</i> )	12.2	31.8	8.9	DNQ	20.5	11.6	255.9	6170.6	215.3	227.9	ND	0.3	2.7
	Whole Fish Sample #8	Grass Rockfish ( <i>Sebastes rastrelliger</i> )	7.9	15.6	DNQ	ND	9.5	5.4	122.7	3367.4	155	152.1	ND	0.3	2.5
	Whole Fish Sample #9	Grass Rockfish ( <i>Sebastes rastrelliger</i> )	8.4	11.9	DNQ	DNQ	8.2	ND	83.7	2626.1	94.5	ND	ND	0.3	2.6
	Whole Fish Sample #10	Grass Rockfish ( <i>Sebastes rastrelliger</i> )	16.3	24.4	7.3	5.5	15.2	13.6	156.5	3203.8	131.2	168.8	ND	0.3	2.6
	Whole Fish Sample #11	Grass Rockfish ( <i>Sebastes rastrelliger</i> )	18.3	ND	ND	ND	DNQ	19.1	44.9	1099.6	28.3	ND	ND	1.1	2.0

Date	Tissue Sample Type	Lipids	OC Pesticides									PCBs	Metals	
		Percent Lipids	Chlordane -alpha	Arochlor 1254	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Arochlor 1254	Total Mercury	Total Selenium
		%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	µg/g	µg/g
5/14/2015	Whole Fish Sample #12	17.3	14.3	ND	ND	6.3	6.9	82.4	2632.9	221.9	273.96	ND	0.3	2.5
	Barred Sandbass (Paralabrax nebulifer)	9.9	ND	ND	ND	DNQ	6.5	24.5	566.1	46.1	ND	ND	0.3	2.1
	Whole Fish Sample #13													
	Barred Sandbass (Paralabrax nebulifer)													

1. Only constituents with detected values are included in the table.

**Table 10. Mugu Lagoon – Western Arm Tissue Data <sup>1</sup>**

Date	Tissue Sample Type		Lipids	OC Pesticides									PCBs	Metals	
			Percent Lipids	Chlordane -alpha	Chlordane-gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Aroclor 1254	Total Mercury	Total Selenium
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	µg/g	µg/g
8/19/2008	Composite Mussel Sample		1.2	ND	ND	ND	ND	ND	6.6	44	ND	ND	ND	DNQ	0.4
8/19/2008	Composite Bait Fish Sample	Top Smelt ( <i>Atherinops affinis</i> )	1.9	ND	ND	ND	ND	ND	26.8	147	ND	ND	ND	DNQ	0.5
8/19/2008	Flat Fish Fillet Sample	Diamond Turbot ( <i>Hypsopsetta guttulata</i> )	0.4	ND	ND	ND	ND	ND	ND	51	ND	ND	ND	DNQ	0.9
8/19/2008	Whole Perch Fish Sample	Shiner Surfperch ( <i>Cymatogaster aggregate</i> )	2.8	12.7	DNQ	9.2	ND	ND	139	664	79.4	117	55	DNQ	0.5
8/18/2011	Composite Mussel Sample		1	ND	ND	DNQ	DNQ	DNQ	ND	105	ND	ND	ND	0.01	0.5
5/14/2015	Whole Fish Sample #1	Top Smelt ( <i>Atherinops affinis</i> )	4.4	12.4	8.8	DNQ	9.9	ND	102	1325.4	34.3	280.5	ND	0.05	3
	Whole Fish Sample #2	Top Smelt ( <i>Atherinops affinis</i> )	5.1	ND	ND	DNQ	6.9	DNQ	28.1	350.8	DNQ	ND	ND	0.06	1.8
	Whole Fish Sample #3	Top Smelt ( <i>Atherinops affinis</i> )	3.9	DNQ	ND	DNQ	6	ND	23	479.5	DNQ	ND	ND	0.06	1.9
	Whole Fish Sample #4	Top Smelt ( <i>Atherinops affinis</i> )	3.3	DNQ	ND	DNQ	5.3	ND	17.2	325.3	DNQ	ND	ND	0.1	1.6
5/14/2015	Whole Fish Sample #5	Top Smelt ( <i>Atherinops affinis</i> )	3.7	DNQ	ND	DNQ	5.2	ND	27.5	342.6	5.4	ND	ND	0.09	1.5

Date	Tissue Sample Type		Lipids	OC Pesticides									PCBs	Metals	
			Percent Lipids	Chlordane-alpha	Chlordane-gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Aroclor 1254	Total Mercury	Total Selenium
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	µg/g	µg/g
5/14/2015	Whole Fish Sample #6	Top Smelt (Atherinops affinis)	6.4	DNQ	DNQ	15.6	12.7	17.4	10.5	279.4	5.7	ND	ND	0.07	2.1
	Whole Fish Sample #7	Top Smelt (Atherinops affinis)	2.7	DNQ	ND	DNQ	DNQ	ND	19.1	591	6.9	ND	ND	0.08	1.7
	Whole Fish Sample #8	Top Smelt (Atherinops affinis)	6.8	ND	ND	18.8	13.7	10.1	16.1	88.4	DNQ	ND	ND	0.07	1.8
	Whole Fish Sample #9	Top Smelt (Atherinops affinis)	3.6	8.5	DNQ	DNQ	5	DNQ	63.2	1300.9	69.8	157.1	ND	0.07	3.9
	Whole Fish Sample #10	Top Smelt (Atherinops affinis)	7.3	DNQ	ND	DNQ	DNQ	ND	14.7	250.9	9.9	86.8	ND	0.1	1.7
	Whole Fish Sample #11	Top Smelt (Atherinops affinis)	3.6	DNQ	ND	DNQ	DNQ	DNQ	20.3	377	5.3	ND	ND	0.07	1.9
	Whole Fish Sample #12	Top Smelt (Atherinops affinis)	4.6	DNQ	DNQ	DNQ	DNQ	DNQ	22.4	271.7	6.2	ND	ND	0.06	2.1
	Whole Fish Sample #13	Top Smelt (Atherinops affinis)	3.1	ND	ND	ND	DNQ	ND	12.8	193.7	DNQ	ND	ND	0.06	1.5
	Whole Fish Sample #14	Top Smelt (Atherinops affinis)	2.9	DNQ	ND	DNQ	DNQ	ND	43.1	890.9	0.5	101.4	ND	0.07	1.6

Date	Tissue Sample Type		Lipids	OC Pesticides									PCBs	Metals	
			Percent Lipids	Chlordane-alpha	Chlordane-gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Aroclor 1254	Total Mercury	Total Selenium
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	µg/g	µg/g
5/14/2015	Whole Fish Sample #15	Top Smelt (Atherinops affinis)	4.9	DNQ	DNQ	DNQ	6.4	ND	40.5	553.1	25	ND	ND	0.05	2
	Whole Fish Sample #16	Top Smelt (Atherinops affinis)	2.9	DNQ	ND	DNQ	DNQ	ND	13.3	332.2	DNQ	ND	ND	0.07	1.9
	Whole Fish Sample #17	Top Smelt (Atherinops affinis)	3.5	DNQ	ND	ND	5	ND	19.6	278	12	ND	ND	0.07	1.6
	Whole Fish Sample #18	Top Smelt (Atherinops affinis)	4.5	DNQ	ND	DNQ	DNQ	ND	24.9	562.1	23	50.3	ND	0.06	2.1
	Whole Fish Sample #19	Top Smelt (Atherinops affinis)	3.9	ND	DNQ	DNQ	DNQ	ND	26.3	480.2	9	ND	ND	0.07	1.9
	Whole Fish Sample #20	Top Smelt (Atherinops affinis)	4.9	9.5	5.1	DNQ	DNQ	ND	57	753.7	57.2	570.4	ND	0.04	4.6
	Whole Fish Sample #21	Top Smelt (Atherinops affinis)	8.7	6.4	DNQ	7.1	6.7	33.4	42	295.7	23.6	194.8	ND	0.07	2.3
	Whole Fish Sample #22	Top Smelt (Atherinops affinis)	3.9	ND	ND	DNQ	DNQ	ND	19.9	329.8	18.3	ND	ND	0.09	1.9

Date	Tissue Sample Type		Lipids  Percent Lipids  %	OC Pesticides									PCBs  Aroclor 1254  ng/g	Metals	
				Chlordane- alpha	Chlordane -gamma	2,4'- DDD	2,4'- DDE	2,4'- DDT	4,4'- DDD	4,4'- DDE	4,4'- DDT	Toxaphene		Total Mercury	Total Selenium
				ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g		µg/g	µg/g
5/14/2015	Whole Fish Sample #23	Barred Sandbass ( <i>Paralabrax nebulifer</i> )	15.3	DNQ	DNQ	12.8	9.7	16.7	99.6	1787.8	21.1	ND	ND	1	1.6
	Whole Fish Sample #24	Barred Sandbass ( <i>Paralabrax nebulifer</i> )	8.1	ND	DNQ	DNQ	DNQ	12.5	29.2	1062.3	45.3	78.21	ND	0.1	1.9
	Whole Fish Sample #25	Barred Sandbass ( <i>Paralabrax nebulifer</i> )	9.8	ND	DNQ	DNQ	DNQ	13.2	30.8	1257.6	63.6	153.64	ND	0.2	1.9
	Whole Fish Sample #26	Barred Sandbass ( <i>Paralabrax nebulifer</i> )	19.7	DNQ	8.5	5.1	DNQ	37.5	116.6	1808.5	103.5	269.34	ND	0.2	1.6
	Whole Fish Sample #27	Barred Sandbass ( <i>Paralabrax nebulifer</i> )	15.4	ND	8	6	DNQ	31.4	76.5	2508.2	44.7	226.74	ND	1.3	1.7
	Whole Fish Sample #28	Grass Rockfish ( <i>Sebastes rastrelliger</i> )	19.2	12	DNQ	DNQ	9.4	6.7	87	1925.2	96.3	337.37	ND	0.3	2.5
	Whole Fish Sample #29	Grass Rockfish ( <i>Sebastes rastrelliger</i> )	20.5	10.4	DNQ	DNQ	12.8	7.3	111	2209.3	72.8	298.54	ND	0.2	2.2
	Whole Fish Sample #30	Grass Rockfish ( <i>Sebastes rastrelliger</i> )	25.8	8.8	DNQ	DNQ	22	11.1	119.7	2017.8	65	322.1	ND	0.2	1.8

Date	Tissue Sample Type		Lipids Percent Lipids %	OC Pesticides									PCBs	Metals	
				Chlordane- alpha ng/g	Chlordane -gamma ng/g	2,4'- DDD ng/g	2,4'- DDE ng/g	2,4'- DDT ng/g	4,4'- DDD ng/g	4,4'- DDE ng/g	4,4'- DDT ng/g	Toxaphene ng/g	Aroclor 1254 ng/g	Total Mercury µg/g	Total Seleniu m µg/g
5/14/2015	Whole Fish Sample #31	Grass Rockfish (Sebastes rastrelliger)	18.9	15.1	DNQ	7.2	11.3	17.2	117.5	2374.4	108.4	309.7	ND	0.3	2.3
	Whole Fish Sample #32	Grass Rockfish (Sebastes rastrelliger)	17.7	9.9	DNQ	5.8	18	7.4	124.9	2150.2	117.4	ND	ND	0.2	2

1. Only constituents with detected values are included in the table.

## Freshwater Tissue Data

Table 11. Calleguas Creek – University Drive CSUCI (03\_UNIV) Fish Tissue Data Years 1-7 <sup>1</sup>

Date	Fish		Lipids	OC Pesticides <sup>2</sup>									PCBs <sup>2</sup>
			Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Toxaphene	Aroclor 1254
			%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
8/6/08	Arroyo Chub	Whole Fish	4.7	DNQ	ND	ND	6.6	ND	ND	373	ND	ND	ND
9/3/09		Comp. #1	4.2	25	11	24	38	97	127	2422	13	6397	54
9/3/09		Comp. #2	5.7	20	13	28	38	102	116	2782	20	5675	55
9/3/09		Comp. #3	6	32	15	31	45	117	175	2951	18	4300	56
9/3/09	Black Bullhead	Carcass	2.5	43	22	22	13	ND	184	6980	469	6469	55
9/3/09		Fillet w/ Skin	1.3	29	13	12	ND	ND	90	3603	233	3283	32
9/3/09	Common Carp	Carcass #1	4	32	15	25	17	29	100	2209	240	4805	ND
9/3/09		Carcass #2	4.3	37	19	24	DNQ	16	112	2492	328	8510	21
9/3/09		Carcass #3	4.7	47	25	26	22	31	119	2744	466	ND	ND
9/3/09		Fillet w/ Skin #1	1.5	5.5	ND	DNQ	ND	10	21	413	46	ND	ND
9/3/09		Fillet w/ Skin #2	1.6	12	DNQ	13	ND	21	25	708	115	ND	ND
9/3/09		Fillet w/ Skin #3	1.9	7.5	DNQ	18	ND	33	45	772	140	ND	ND
9/3/10	Arroyo Chub	0-85 mm	4.3	DNQ	DNQ	ND	DNQ	DNQ	DNQ	167	16	ND	ND
9/3/10		86-112 mm	7	DNQ	DNQ	DNQ	12	30	44	1300	20	646	ND
9/3/10		Common Carp	4.3	DNQ	DNQ	DNQ	ND	DNQ	21	247	32	403	ND
8/25/11	Common Carp		1.9	DNQ	ND	DNQ	ND	8.5	ND	125	ND	DNQ	ND
8/30/12			1.5	ND	ND	ND	ND	ND	ND	175	ND	ND	ND
8/27/13	Whole Fish Composite Fathead Minnow Green Sunfish Common Carp		3	ND	ND	ND	ND	ND	ND	200.5	ND	ND	ND

Date	Fish		Lipids Percent Lipids %	OC Pesticides <sup>2</sup>									PCBs <sup>2</sup> Aroclor 1254 ng/g
				Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'- DDD ng/g	2,4'- DDE ng/g	2,4'- DDT ng/g	4,4'- DDD ng/g	4,4'- DDE ng/g	4,4'- DDT ng/g	Toxaphene ng/g	
5/14/15	Common Carp	Whole Fish	5.1	37	9.5	19.2	20.3	103.1	227.5	7093.5	26.5	623.4	505.4
		Filet w/o skin #1	2.4	ND	ND	DNQ	DNQ	6.1	15.6	901.7	ND	128.7	DNQ
		Filet w/o skin #2	1.3	ND	ND	ND	ND	DNQ	DNQ	330.6	ND	93.19	ND

1. Only constituents with detected values are included in the table.

2. Units are wet weight.

**Table 12. Conejo Creek – Adolfo Road (9B\_ADOLF) Fish Tissue Data Years 1 – 7 <sup>1, 2</sup>**

Date	Fish		Lipids	OC Pesticides <sup>3</sup>									PCBs <sup>3</sup>
			Percent Lipids %	Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'-DDD ng/g	2,4'-DDE ng/g	2,4'-DDT ng/g	4,4'-DDD ng/g	4,4'-DDE ng/g	4,4'-DDT ng/g	Toxaphene ng/g	Aroclor 1254 ng/g
8/6/08	Common Carp		3.5	ND	ND	ND	ND	ND	ND	111	54	ND	ND
9/3/09	Arroyo chub	Comp. #1	8.6	19	8.2	10	22	54	47	694	14	3611	ND
9/3/09		Comp. #2	9.5	18	5.2	15	15	40	37	646	21	3213	56
9/3/09		Comp. #3	8.4	18	6.8	16	21	43	61	629	ND	2766	67
9/3/09	Common Carp	Carcass #1	2.5	21	6.0	15	ND	ND	27	754	ND	ND	54
9/3/09		Fillet w/ Skin #1	0.8	ND	ND	ND	ND	ND	10	190	ND	ND	ND
9/3/09		Carcass #2	4.8	49	24	18	ND	ND	170	3643	99	3566	93
9/3/09		Fillet w/ Skin #2	1.6	10	5.4	8.6	ND	ND	43	1019	30	ND	26
9/3/09		Carcass Comp. #3	4	27	15	19	12	131	58	1019	190	2544	70
9/3/09		Fillet Comp. w/ Skin #3	1.8	DNQ	ND	25	ND	57	37	274	86	ND	ND
9/3/10	Arroyo chub	0-85 mm	4.9	DNQ	ND	DNQ	DNQ	11	21	626	17	487	ND
9/3/10		86-112 mm	6.6	DNQ	DNQ	ND	DNQ	DNQ	DNQ	137	14	ND	ND
8/25/11	Common carp		2.4	DNQ	DNQ	ND	ND	DNQ	ND	49	ND	DNQ	ND
8/27/13	Largemouth Bass		1.3	ND	ND	ND	ND	ND	ND	85.7	ND	ND	ND
5/14/15	Common Carp	Whole Fish	13.4	31.2	13.7	15.9	ND	20.5	35.2	678.1	DNQ	347.68	106.9
		Filet w/o skin #1	9.8	22.9	10.9	12.4	10.2	7.4	35.2	350.5	10.6	452.86	58.5
		Filet w/o skin #2	4.8	8	DNQ	DNQ	DNQ	5.2	12.2	635.7	ND	185.91	99.6

1. Only constituents with detected values are included in the table.

2. No fish were caught at this site during year five.

3. Units are wet weight.

**Table 13. Arroyo Simi – Hitch Boulevard (07\_HITCH) Fish Tissue Data Years 1 – 7 <sup>1, 2</sup>**

Date	Fish			Lipids	OC Pesticides <sup>3</sup>								PCBs <sup>3</sup>
				Percent Lipids	Chlordane -alpha	Chlordane -gamma	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Aroclor 1254
				%	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g	ng/g
8/6/08	Arroyo Chub	Composite		8.3	ND	ND	ND	DNQ	ND	ND	521	ND	ND
9/3/09	Arroyo Chub	Composite #1	43-60mm	9.5	DNQ	ND	20	ND	52	233	955	ND	ND
9/3/09		Composite #1	65-90mm	10.6	ND	ND	5.3	DNQ	12	15.8	365	ND	ND
9/3/09		Composite #2	43-60mm	9.7	DNQ	ND	33	ND	749	437	1183	ND	ND
9/3/09		Composite #2	65-90mm	10.5	DNQ	ND	32	14.6	74	195	1648	26	28
9/3/09		Composite #3	43-60mm	8.3	DNQ	ND	26	ND	45	343	967	ND	ND
9/3/09		Composite #3	65-90mm	11.3	6.6	ND	27	ND	57	110	1275	38	ND
9/3/10		Arroyo Chub		7.8	ND	ND	DNQ	DNQ	19	19.2	673	DNQ	ND
8/28/13	Whole Fish Composite Largemouth Bass Goldfish			11.9	ND	ND	ND	ND	ND	ND	ND	ND	ND
5/14/15	Largemouth Bass	Whole fish #1		14.5	20.3	DNQ	ND	ND	ND	ND	315.1	ND	85.8
		Whole fish #2		11.8	ND	ND	ND	ND	ND	ND	254.4	ND	22.2
		Whole fish #3		14.9	DNQ	ND	ND	ND	5.1	11.8	574.1	20.6	33.7
		Whole fish #4		7.8	DNQ	ND	ND	ND	ND	ND	328.9	ND	53.1
		Whole fish #5		14.7	7.2	ND	ND	ND	5.6	10.1	398.7	15.8	71.9

1. Only constituents with detected values are included in the table.

2. No fish were caught at this site during years 4 or 5.

3. Units are wet weight.

**Table 14. Arroyo Las Posas – Somis Road (06\_SOMIS) Fish Tissue Data Years 1 – 7 <sup>1, 2</sup>**

Date	Fish			Lipids Percent Lipids %	OC Pesticides <sup>3</sup>							PCBs <sup>3</sup> Aroclor 1254 ng/g	
					Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'- DDD ng/g	2,4'- DDE ng/g	2,4'- DDT ng/g	4,4'- DDD ng/g	4,4'- DDE ng/g		Toxaphene ng/g
8/6/08	Arroyo Chub	Composite		2.7	ND	ND	ND	ND	ND	ND	492	ND	ND
9/3/09	Arroyo Chub	Composite #1	29-51mm	6.7	11	DNQ	37	ND	ND	646	1918	ND	34
9/3/09		Composite #1	53-97mm	4.6	DNQ	ND	62	ND	ND	535	1967	2821	36
9/3/09		Composite #2	29-51mm	6.8	9.0	DNQ	55	ND	ND	1158	2203	ND	31
9/3/09		Composite #2	53-97mm	6.2	12	5.9	28	16	43	128	2313	3054	44
9/3/09		Composite #3	29-51mm	5.7	10	DNQ	30	11	122	157	2124	ND	56
9/3/09		Composite #3	53-97mm	5.3	10	DNQ	12	ND	36	258	2258	2103	32

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during years 3, 4, 5, 6, or 7.
3. Units are wet weight.

**Table 15. Revolon Slough – Wood Road (04\_WOOD) Fish Tissue Data Years 1 – 7 <sup>1,2</sup>**

Date	Fish	Lipids Percent Lipids %	OC Pesticides <sup>3</sup>									PCBs <sup>3</sup> Aroclor 1254 ng/g	
			Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'- DDD ng/g	2,4'- DDE ng/g	2,4'- DDT ng/g	4,4'- DDD ng/g	4,4'- DDE ng/g	4,4'- DDT ng/g	Toxaphene ng/g		
8/7/08	Common Carp	Comp. Fillet, no skin	3	ND	ND	27	ND	14	85	1194	21	349	ND
8/7/08		Comp. Fillet w/ skin	2.1	5.3	ND	18	7.4	DNQ	40	615	13	259	ND
9/3/09	Common Carp	Carcass	12.1	91	62	129	25	ND	1210	11100	904	25800	28
9/3/09		Fillet w/ Skin #1	2.8	35	21	55	17	ND	262	4210	328	6630	ND
9/3/09		Carcass	9.6	102	60	205	76	ND	1070	9590	367	17000	51
9/3/09		Fillet w/ Skin #2	3.3	47	31	110	31	ND	371	4790	168	5930	DNQ
9/3/09		Carcass	9	117	66	185	64	ND	1100	7750	411	14300	54
9/3/09		Fillet w/ Skin #3	2.7	54	33	77	39	50	378	4000	239	5480	20
9/3/09	Arroyo Chub	Comp. #1	8.7	41	27	133	77	191	878	6320	57	14700	24
9/3/09		Comp. #1	9	38	24	82	73	222	689	5630	36	19900	DNQ
9/3/09		Comp. #2	6.9	33	16	88	65	168	568	5580	52	17900	ND
8/25/11	Common carp		2.6	9.3	5.5	15	DNQ	67	ND	819	8.5	206	ND
9/4/12	Common carp		5.6	ND	ND	ND	ND	116	ND	1750	ND	ND	ND
8/27/13	Whole Fish Composite Common carp Fathead Minnow		6.3	ND	ND	ND	ND	ND	84.3	1984.1	ND	1611.1	ND

Date	Fish	Lipids Percent Lipids %	OC Pesticides <sup>3</sup>									PCBs <sup>3</sup> Aroclor 1254 ng/g	
			Chlordane -alpha ng/g	Chlordane -gamma ng/g	2,4'- DDD ng/g	2,4'- DDE ng/g	2,4'- DDT ng/g	4,4'- DDD ng/g	4,4'- DDE ng/g	4,4'- DDT ng/g	Toxaphene ng/g		
5/14/15	Common Carp	Whole Fish #1	13.6	50.1	24.2	76.2	35.1	61.4	277.1	4474.4	294.5	3534.4	57.4
		Whole Fish #2	15.6	136.5	66.7	139.3	40.9	91.4	608	10502.1	560.4	4699.7	119.1
		Whole Fish #3	16.9	89.9	42.4	57.7	ND	67.4	534.5	8634.2	316.4	4147.6	72.7
		Fillet w/o skin #1	11.5	60.6	31	74.6	26.3	41.4	171.8	3492.5	217.5	3116.8	20.4
		Filet w/o skin #2	3.2	DNQ	DNQ	7.5	ND	13.7	37.3	632.7	41	728.3	ND
		Filet w/o skin #3	3.1	DNQ	DNQ	DNQ	ND	12.7	28.3	669.7	36.9	472.1	ND
		Filet w/o skin #4	2.6	DNQ	DNQ	9.4	6.6	14	29.4	724.4	18.5	472.9	ND
	Bullhead	Whole Fish	12.4	56	26.8	45.1	ND	80.5	270	3880.8	360.8	4567.3	42.9
		Filet w/o skin #1	2.8	ND	ND	ND	ND	18.3	39.8	810.7	40.8	736.6	ND
		Filet w/o skin #2	6.2	ND	ND	ND	ND	22.5	40.5	749.4	30.5	635.9	ND

1. Only constituents with detected values are included in the table.

2. No fish were caught at this site during year 3.

3. Units are wet weight.

**Table 16. Revolon Slough – Wood Road (04\_WOOD) Metals Fish Tissue Data Years 1 – 7 <sup>1, 2</sup>**

Date	Fish	Lipids Percent Lipids %	Metals <sup>3</sup>		
			Total Mercury µg/g	Total Selenium µg/g	
8/7/08	Common Carp	Comp. Fillet, no skin	3	DNQ	1.3
8/7/08		Comp. Fillet w/ skin	2.1	DNQ	2.3
9/3/09	Common Carp	Carcass #1	12.1	DNQ	1.5
9/3/09		Fillet w/ Skin #1	2.8	DNQ	1.6
9/3/09		Carcass #2	9.6	DNQ	1.9
9/3/09		Fillet w/ Skin #2	3.3	DNQ	2.1
9/3/09		Carcass #3	9	DNQ	1.4
9/3/09		Fillet w/ Skin #3	2.7	0.02	1.7
9/3/09	Arroyo Chub	Comp. #1	8.7	0.02	1.6
9/3/09		Comp. #1	9	0.02	1.8
9/3/09		Comp. #2	6.9	0.02	1.4
8/25/11	Common carp		2.6	0.004	2.7
9/4/12	Common carp		5.6	0.011	1.9
8/27/13	Whole Fish Composite Common carp Fathead Minnow		6.3	0.01	1.9

Date	Fish	Lipids Percent Lipids %	Metals <sup>3</sup>	
			Total Mercury µg/g	Total Selenium µg/g
5/14/15	Whole Fish #1	13.6	0.1	6.5
	Whole Fish #2	15.6	0.1	5.3
	Whole Fish #3	16.9	0.1	4.8
	Common Carp Fillet w/o skin #1	11.5	0.1	4.8
	Fillet w/o skin #2	3.2	0.1	5.3
	Fillet w/o skin #3	3.1	0.1	5.9
	Fillet w/o skin #4	2.6	0.1	5.5
	Bullhead Whole Fish	12.4	0.1	7.9
	Fillet w/o skin #1	2.8	0.1	5.9
	Fillet w/o skin #2	6.2	0.2	5.1

1. Only constituents with detected values are included in the table.
2. No fish were caught at this site during year 3.
3. Units are wet weight.

## TOXICITY DATA

The following is a summary of the toxicity results to date for water column and sediment at the freshwater and estuarine sampling sites. Table 17 displays significant water column mortality test results for seven years of CCWTMP events, including both dry and storm (bolded text) events. Significant mortality found in freshwater sediments is shown in Table 18 and significant mortality at the estuarine sites is shown in Table 19.

Toxicity was frequently identified at the 04\_WOOD site during the first two monitoring years in water column samples and in each of the four sediment samples. The Stakeholders have chosen to invest resources into source control efforts to address sources potentially contributing to the toxicity issue. This is being accomplished through the implementation of the Agricultural Water Quality Management Plan (AWQMP) developed by the Ventura County Agricultural Irrigated Lands Group (VCAILG) as part of the Conditional Waiver for Irrigated Agricultural Lands (Ag Waiver).

During dry weather water column sampling, toxicity has been identified historically at all sampled sites except 13\_BELT. There were three occurrences of dry weather water column toxicity during the seventh year of monitoring. Toxicity has been identified during wet weather monitoring at all sites, except for 10\_GATE and 13\_BELT. Wet weather toxicity occurred during both storm events for seventh year monitoring (Event 46 and Event 47).

Water column TIEs have been initiated as described previously, and outcomes of these efforts have had limited success in identifying the true cause of toxicity. While not identifying the specific constituents causing toxicity, the TIEs have identified:

- Organic compounds are likely contributors to ambient water toxicity.
- Compounds similar to organophosphorus (OP) pesticides are continually being identified as possible contributors to the observed toxicity.

The results of future CCWTMP toxicity testing will continue to assist in the identification of when and where conditions are toxic in the Calleguas Creek watershed, and help the stakeholders better target areas in the watershed that show continual toxicity and focus limited resources to address the problems.

The majority of the freshwater toxicity occurrences during year seven were at the 04\_WOOD site (five of the eight occurrences). The others were during wet Event 46 at the 03\_UNIV, 06\_SOMIS, and 07\_HITCH sites.

In year seven, fresh water sediment toxicity testing was performed during Event 44 for 04\_WOOD, 02\_PCH, 03\_UNIV, and 9A\_HOWAR. Statistically significant acute toxicity was observed for *Hyalella azteca* at 04\_WOOD and 03\_UNIV, but no toxicity was observed for the remaining sites. Follow-up toxicity investigation was not conducted at the 04\_WOOD and 03\_UNIV sites as TIEs are not performed at 04\_WOOD due to the reason stated above and there was less than a 20 percent reduction in survival for the 03\_UNIV site compared to the sample control.

Mugu Lagoon sediment toxicity testing was also conducted during Event 44 at the 01\_BPT\_03, 01\_BPT\_06, 01\_BPT\_14, 01\_BPT\_15, and 01\_BPT\_74 sites. No survival toxicity was observed for *Eohaustorius estuaries* during year seven lagoon sediment toxicity testing.

**Table 17. Water Column Toxicity for All Monitoring Events and Sites**

(Significant mortality denoted by "X", bolded events are wet weather events)

CCWMTP Year	Event	Site ID						
		04_WOOD	9B_ADOLF	03_UNIV	10_GATE	06_SOMIS	13_BELT	07_HITCH
Year 1	1	X						
	2	X						
	3	X	X	X				X
	4	X						
	5	X						X
	6							
Year 2	9							
	12	X						
	14	X		X		X		
	16	X		X				X
	17							
	20			X				
Year 3	22							
	23							
	24	X						
	25							
	26	X						X
	27							
Year 4	28					X		
	29		X		X			
	30	X						
	31							
	32			X				
	33							
Year 5 <sup>1</sup>	34							
	35							
	36	X <sup>2</sup>						
	37			X <sup>3</sup>				
	38							
Year 6	39	X <sup>2</sup>						
	40				4			
	41		6	6	6	6	5	6
	42							
	43							
Year 7	44	X <sup>2</sup>		7		8		
	45	X <sup>2</sup>					9	
	46	X <sup>2</sup>		X <sup>10</sup>		X <sup>11</sup>		X <sup>10</sup>
	47	X <sup>2</sup>						
	48							
	49	X <sup>2</sup>				12	12	

1. 10\_GATE and 13\_BELT are also toxicity investigation monitoring sites. During year 5 these sites were only sampled during event 38.

2. A TIE was not initiated at this site. TIEs conducted during previous monitoring years identified organic compounds such as pesticides as the likely cause of the toxicity. TIEs have been suspended while efforts are taken to reduce the source of the toxicity.

3. A Phase I TIE was conducted for this site. While the TIE did not conclusively identify a source of toxicity, the results were indicative of organic compounds. The corresponding water quality sample detected the OP pesticide chlorpyrifos at a concentration of 0.083 µg/L. This level is above the wasteload allocation for stormwater discharges but below the agricultural discharger's interim load allocation and above the final numeric target.
4. Toxicity testing was not performed at the 10\_GATE site for Event 40.
5. Toxicity testing was not performed at the 10\_BELT site for Event 41.
6. Successful toxicity testing for sites with conductivity less than 3000 µS/cm could not be completed for Event 41 due to a decline in the *C. dubia* laboratory culture. Sites include: 9B\_ADOLF, 03\_UNIV, 10\_GATE, 06\_SOMIS, and 07\_HITCH.
7. An initial and a follow-up Phase I TIE was conducted for this site. Though the acute and chronic results of the toxicity test was not significantly different than that of the laboratory, the testing of this site did result in a greater than 50% mortality, triggering the initial and follow-up Phase I TIE. The initial TIE did not conclusively determine the source of toxicity, but did suggest that multiple co-occurring contaminants may have been responsible for the toxicity. The follow-up TIE demonstrated that no additional reductions in survival or reproduction occurred after the initial Baseline treatment, suggesting that the toxicity observed in the initial test was not persistent. This result suggests that the toxicant may have undergone natural degradation processes as the sample water aged.
8. Toxicity testing was not performed at the 06\_SOMIS site for Event 44.
9. Toxicity testing was not performed at the 13\_BELT site for Event 45.
10. A Phase I TIE was initiated at this site. While the TIE did not conclusively identify a source of toxicity, the results suggest that compounds that are activated by the Cytochrome-P450 system (e.g. OP pesticides) are contributing to sample toxicity.
11. A Phase I TIE was initiated at this site. While the TIE did not conclusively identify a source of toxicity, the results suggest that non-polar organic compound(s) are contributing to the ambient toxicity.
12. Toxicity testing was not performed at the 06\_SOMIS or 13\_BELT sites for Event 49.

**Table 18. Sediment Toxicity for All CCWTMP Freshwater Monitoring Events and Sites**  
(Significant mortality denoted by "X")

CCWTMP Year	Event	Site ID			
		04_WOOD	02_PCH <sup>1</sup>	03_UNIV	9A_HOWAR <sup>1</sup>
Year 1	1	X			
Year 2	9	X			
Year 3	22	X			
Year 4	28	X	X	X	
Year 5	34	X		X	
Year 6	39	X		X <sup>2</sup>	
Year 7	44	X		X	

1. 02\_PCH and 9A\_HOWAR are toxicity investigation monitoring sites.
2. A TIE targeted for organics was performed for the 03\_UNIV site due to a greater than 50 percent reduction in *H. azteca* survival.

**Table 19. Sediment Toxicity for Mugu Lagoon Monitoring Events and Sites**  
(Significant mortality denoted by "X")

CCWTMP Year	Event	Site ID				
		01_BPT_3	01_BPT_6	01_BPT_14	01_BPT_15	01_BPT_14
Year 1	1		X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>	X <sup>1</sup>
Year 4	28					
Year 7	44					

1. Survival toxicity for *Eohaustorius estuaries*, but not for *Mytilus galloprovinciales*.

# Compliance Analysis and Discussion

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## COMPLIANCE COMPARISON

As outlined in the QAPP, data applicable to compliance targets or allocations is reviewed in this report. The following tables list the applicable compliance measures that are covered by the sixth year of monitoring. For the compliance assessment, two types of assessment procedures were used depending on whether or not the final compliance dates for the TMDL were applicable during the monitoring year.

For TMDLs where final allocations or targets are not currently effective (OC Pesticides, Metals, and Salts TMDLs), the following compliance comparisons were conducted:

1. Applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the interim load allocations and waste load allocations.
2. If an exceedance of an interim load allocation and/or waste load allocation was observed, the contributing land use data were assessed to evaluate the potential cause of the exceedance.
3. POTW effluent data were compared to the relevant interim waste load allocations.

For the Nitrogen TMDL the following compliance comparisons were conducted:

1. For POTWs, the final waste load allocations are currently effective. As a result, effluent monitoring results were compared to the final allocations for the analysis.
2. For agricultural dischargers and other non-point sources, final load allocations are currently effective. Since agricultural dischargers are the only entities with allocations other than POTWs, compliance is assessed by comparing receiving water results against TMDL numeric targets.

For the Toxicity TMDL, the following compliance comparisons were conducted:

1. For POTWs, the final waste load allocations are currently effective. As a result, effluent monitoring results were compared to the final allocations for the analysis.
2. For MS4 dischargers, the final waste load allocations are currently effective. As a result, applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the final waste load allocations. If an exceedance of the final waste load allocation was found, the contributing urban land use data were assessed to evaluate whether the MS4 was potentially causing the exceedance.
3. For agricultural dischargers, the final load allocations are not yet effective. As a result, applicable receiving water data at the compliance locations (base of each subwatershed) were compared to the interim load allocations. If an exceedance of an interim load allocation was observed, the contributing agricultural land use data were assessed to evaluate whether agricultural discharges were potentially causing the exceedance.
4. In cases where the applicable interim load allocations or final waste load allocations have different values for acute (1-hour) toxicity and chronic (4-day) toxicity, the acute toxicity allocations were used for assessing wet weather data and the chronic toxicity allocations were used for assessing dry-weather data.

The following tables compare the applicable allocations based on the compliance procedure outlined above for each of the TMDLs. Some constituents sampled under the CCWTMP do not have applicable allocations and/or targets and are not included in the compliance analysis.



## COMPLIANCE AT RECEIVING WATER SITES

Table 20. OC Pesticides, PCBs, & Siltation in Sediment

Site & Constituent	Units	Interim WLA & LA <sup>1</sup>	Event 44 Aug-2014
<b><i>Calleguas Creek – Hwy 1 Bridge (02_PCH)</i></b>			
Total Chlordane <sup>2</sup>	ng/g dw	17	ND
4,4'-DDD	ng/g dw	66	ND
4,4'-DDE	ng/g dw	470	DNQ
4,4'-DDT	ng/g dw	110	DNQ
Dieldrin	ng/g dw	3	ND
PCBs <sup>3</sup>	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND
<b><i>Revolon Slough – Wood Road (04_WOOD)</i></b>			
Total Chlordane <sup>2</sup>	ng/g dw	48	ND
4,4'-DDD	ng/g dw	400	DNQ
4,4'-DDE	ng/g dw	1600	ND
4,4'-DDT	ng/g dw	690	7.0
Dieldrin	ng/g dw	5.7	ND
PCBs <sup>3</sup>	ng/g dw	7600	ND
Toxaphene	ng/g dw	790	ND
<b><i>Calleguas Creek – University Drive CSUCI (03_UNIV)</i></b>			
Total Chlordane <sup>2</sup>	ng/g dw	17	ND
4,4'-DDD	ng/g dw	66	ND
4,4'-DDE	ng/g dw	470	DNQ
4,4'-DDT	ng/g dw	110	ND
Dieldrin	ng/g dw	3	ND
PCBs <sup>3</sup>	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND
<b><i>Conejo Creek – Adolfo Road (9B_ADOLF)</i></b>			
Total Chlordane <sup>2</sup>	ng/g dw	3.4	DNQ
4,4'-DDD	ng/g dw	5.3	ND
4,4'-DDE	ng/g dw	20	19.0
4,4'-DDT	ng/g dw	2	29.3
Dieldrin	ng/g dw	3	ND
PCBs <sup>3</sup>	ng/g dw	3800	ND
Toxaphene	ng/g dw	260	ND

**Table 21. OC Pesticides, PCBs, & Siltation in Sediment (continued)**

Site & Constituent	Units	Interim WLA & LA <sup>1</sup>	Event 44 Aug-2014
<b><i>Arroyo Las Posas – Somis Road (06_SOMIS)</i></b>			
Total Chlordane <sup>2</sup>	ng/g dw	3.3	ND
4,4'-DDD	ng/g dw	290	ND
4,4'-DDE	ng/g dw	950	5.1
4,4'-DDT	ng/g dw	670	DNQ
Dieldrin	ng/g dw	1.1	ND
PCBs <sup>3</sup>	ng/g dw	25,700	ND
Toxaphene	ng/g dw	230	ND
<b><i>Arroyo Simi – Hitch Boulevard (07_HITCH)</i></b>			
Total Chlordane <sup>2</sup>	ng/g dw	3.3	ND
4,4'-DDD	ng/g dw	14	ND
4,4'-DDE	ng/g dw	170	ND
4,4'-DDT	ng/g dw	25	ND
Dieldrin	ng/g dw	1.1	ND
PCBs <sup>3</sup>	ng/g dw	25,700	ND
Toxaphene	ng/g dw	230	ND

ND=not detected; DNQ=detected not quantifiable

1. Interim waste load allocation for stormwater permittees and interim load allocations for agricultural dischargers; effective until March 24, 2026 (R4-2005-010).
2. Total chlordane is the sum of alpha and gamma-chlordane.
3. PCBs concentrations are the sum of the seven aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).

Table 22. Nitrogen Compounds in Water

Site & Constituent	Units	Target <sub>1</sub>	Event 44 Dry Aug-14	Event 45 Dry Nov-14	Event 46 Wet Dec-14	Event 47 Wet Dec-14	Event 48 Dry Feb-15	Event 49 Dry May-15
<b><i>Mugu Lagoon - Ronald Reagan Bridge (01_RR_BR)</i></b>								
Ammonia as N	mg/L	8.1	0.19	0.7	0.54	0.91	ND	0.12
Nitrate as N	mg/L	10	8.35	8.35	8.35	8.35	8.35	8.35
Nitrite as N	mg/L	1	0.17	0.11	0.01	0.01	0.01	0.14
Nitrate-N + Nitrite-N	mg/L	10	8.52	26.76	28.51	5.25	0.05	13.25
<b><i>Calleguas Creek – Hwy 1 Bridge (02_PCH)</i></b>								
Ammonia as N	mg/L	5.5	ND	0.21	NR	NR	ND	0.14
Nitrate as N	mg/L	10	25.02	19.87	NR	NR	17.36	16.23
Nitrite as N	mg/L	1	0.01	0.01	NR	NR	0.01	0.01
Nitrate-N + Nitrite-N	mg/L	10	25.03	19.88	NR	NR	17.37	16.24
<b><i>Calleguas Creek – University Drive CSUCI (03_UNIV)</i></b>								
Ammonia as N	mg/L	8.4	0.06	0.09	0.33	0.55	0.13	0.08
Nitrate as N	mg/L	10	6.82	7.31	3.1	1.92	6.4	6.84
Nitrite as N	mg/L	1	0.01	0.13	ND	ND	0.07	0.01
Nitrate-N + Nitrite-N	mg/L	10	6.83	7.44	3.1	1.9	6.47	6.85
<b><i>Revolon Slough – Wood Road (04_WOOD)</i></b>								
Ammonia as N	mg/L	5.7	0.12	0.22	0.37	0.3	0.08	0.12
Nitrate as N	mg/L	10	46.9	47.33	5.56	3.71	42.65	44.6
Nitrite as N	mg/L	1	0.61	0.28	ND	0.03	0.34	0.44
Nitrate-N + Nitrite-N	mg/L	10	47.51	47.61	5.56	3.74	42.99	45.04
<b><i>Beardsley Wash – Central Avenue (05_CENTR)</i></b>								
Ammonia as N	mg/L	5.7	ND	0.11	0.47	0.6	ND	ND
Nitrate as N	mg/L	10	32.4	8.68	8.89	4.68	11.08	29.9
Nitrite as N	mg/L	1	0.29	0.05	ND	0.03	0.1	0.25
Nitrate-N + Nitrite-N	mg/L	10	32.69	8.73	8.89	4.71	11.18	30.15
<b><i>Arroyo Las Posas – Somis Road (06_SOMIS)</i></b>								
Ammonia as N	mg/L	8.1	--	0.07	0.44	0.51	ND	NS
Nitrate as N	mg/L	10	--	12.72	9.49	1.38	10.1	NS
Nitrite as N	mg/L	1	--	0.03	0.04	0.01	0.04	NS
Nitrate-N + Nitrite-N	mg/L	10	--	12.75	9.53	1.39	10.14	NS
<b><i>Arroyo Simi – Hitch Boulevard (07_HITCH)</i></b>								

Site & Constituent	Units	Target <sup>1</sup>	Event 44 Dry Aug-14	Event 45 Dry Nov-14	Event 46 Wet Dec-14	Event 47 Wet Dec-14	Event 48 Dry Feb-15	Event 49 Dry May-15
Ammonia as N	mg/L	4.7	0.23	0.04	0.4	0.46	ND	0.04
Nitrate as N	mg/L	10	10.09	9.86	3.67	1.29	10.77	9.92
Nitrite as N	mg/L	1	0.07	0.03	ND	0.01	0.04	0.05
Nitrate-N + Nitrite-N	mg/L	10	10.16	9.89	3.67	1.3	10.81	9.97
<b>Arroyo Simi – Madera Avenue (07_MADER)</b>								
Ammonia as N	mg/L	4.7	ND	0.2	0.58	0.34	0.05	0.05
Nitrate as N	mg/L	10	4.1	4.79	0.93	1.32	3.44	5.15
Nitrite as N	mg/L	1	0.01	0.05	0.03	0.01	0.05	0.11
Nitrate-N + Nitrite-N	mg/L	10	4.11	4.84	0.96	1.33	3.49	5.26
<b>Conejo Creek – Howard Road Bridge (9A_HOWAR)</b>								
Ammonia as N	mg/L	9.5	0.83	1.28	NR	NR	0.44	0.38
Nitrate as N	mg/L	10	7.73	8.31	NR	NR	6.25	6.54
Nitrite as N	mg/L	1	0.08	0.1	NR	NR	0.04	0.06
Nitrate-N + Nitrite-N	mg/L	10	7.81	8.41	NR	NR	6.29	6.6
<b>Conejo Creek – Adolfo Road (9B_ADOLF)</b>								
Ammonia as N	mg/L	9.5	0.04	0.16	0.37	0.41	0.03	0.04
Nitrate as N	mg/L	10	5.63	6.29	1.14	1.71	5.56	5.76
Nitrite as N	mg/L	1	0.01	ND	0.01	0.01	0.01	0.01
Nitrate-N + Nitrite-N	mg/L	10	5.64	6.29	1.15	1.72	5.57	5.77
<b>Conejo Creek – Hill Canyon Below N Fork (10_GATE)</b>								
Ammonia as N	mg/L	8.4	0.22	0.65	0.42	0.28	0.56	0.41
Nitrate as N	mg/L	10	5.69	5.75	0.86	1.68	4.94	5.24
Nitrite as N	mg/L	1	0.17	0.19	ND	0.01	0.12	0.1
Nitrate-N + Nitrite-N	mg/L	10	5.86	5.94	0.86	1.69	5.06	5.34
<b>Conejo Creek – North Fork Above Hill Canyon (12_PARK)</b>								
Ammonia as N	mg/L	3.2	ND	0.03	NR	NR	ND	ND
Nitrate as N	mg/L	10	ND	0.39	NR	NR	0.36	0.06
Nitrite as N	mg/L	1	0.01	0.01	NR	NR	0.03	0.01
Nitrate-N + Nitrite-N	mg/L	10	0.01	0.4	NR	NR	0.39	0.07
<b>Conejo Creek – S Fork Behind Belt Press Build (13_BELT)</b>								
Ammonia as N	mg/L	5.1	ND	0.1	NR	NR	ND	ND
Nitrate as N	mg/L	10	0.31	0.95	NR	NR	0.61	0.28
Nitrite as N	mg/L	1	0.01	0.01	NR	NR	0.01	0.01

Site & Constituent	Units	Target <sup>1</sup>	Event 44 Dry Aug-14	Event 45 Dry Nov-14	Event 46 Wet Dec-14	Event 47 Wet Dec-14	Event 48 Dry Feb-15	Event 49 Dry May-15
Nitrate-N + Nitrite-N	mg/L	10	0.32	0.96	NR	NR	0.62	0.29

NS=no sample, dry; NR=not required; ND=not detected; DNQ=detected not quantifiable; J=estimated DNQ values for Nitrite-N, shown for the purpose of calculating the Nitrite-N + Nitrate-N sum and comparing it against the Nitrate-N + Nitrite-N target.

1. Load allocations for Nitrate-N + Nitrite-N are in effect for agricultural and other non-point sources. To evaluate compliance, monitoring results at receiving water compliance sites were compared against TMDL numeric targets (R4-2008-009).
2. One-hour average.

Results in **bold red type** exceed numeric TMDL target.

Table 23. Toxicity, Diazinon, and Chlorpyrifos in Water

Site & Constituent	Units	Dry WLA <sup>1</sup>	Dry Interim LA <sup>2</sup>	Event 44 Dry Aug-14	Event 45 Dry Nov-14	Event 48 Dry Feb-15	Event 49 Dry May-15	Wet WLA <sup>1</sup>	Wet Interim LA <sup>2</sup>	Event 46 Wet Dec-14	Event 47 Wet Dec-14
<b>Mugu Lagoon – Ronald Reagan Bridge (01_RR_BR)</b>											
Chlorpyrifos	ug/L	0.014	0.81	0.0017	0.028	ND	ND	0.014	2.57	0.719	0.381
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	0.004	ND
<b>Calleguas Creek – University Drive CSUCI (03_UNIV)</b>											
Chlorpyrifos	ug/L	0.014	0.81	ND	0.114	0.004	0.005	0.014	2.57	0.348	0.152
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	0.006	ND
<b>Revolon Slough – Wood Road (04_WOOD)</b>											
Chlorpyrifos	ug/L	0.014	0.81	0.0050	0.084	0.006	0.003	0.014	2.57	3.082	0.593
Diazinon	ug/L	0.1	0.138	ND	0.163	ND	ND	0.1	0.278	0.019	0.0956
<b>Arroyo Las Posas – Somis Road (06_SOMIS)</b>											
Chlorpyrifos	ug/L	0.014	0.81	NS	0.009	0.003	NS	0.014	2.57	0.263	0.111
Diazinon	ug/L	0.1	0.138	NS	ND	ND	NS	0.1	0.278	ND	ND
<b>Arroyo Simi – Hitch Boulevard (07_HITCH)</b>											
Chlorpyrifos	ug/L	0.014	0.81	0.058	0.002	0.005	0.004	0.014	2.57	0.7	0.015
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	ND	ND
<b>Conejo Creek – Adolfo Road (9B_ADOLF)</b>											
Chlorpyrifos	ug/L	0.014	0.81	ND	0.003	ND	0.003	0.014	2.57	0.022	0.026
Diazinon	ug/L	0.1	0.138	ND	ND	ND	ND	0.1	0.278	0.027	0.014
<b>Conejo Creek – Hill Canyon Below N Fork (10_GATE)</b>											
Chlorpyrifos	ug/L	0.014	0.81	0.0012	ND	NS	ND	0.014	2.57	ND	ND
Diazinon	ug/L	0.1	0.138	ND	ND	NS	ND	0.1	0.278	ND	ND
<b>Conejo Creek – S Fork Behind Belt Press Build (13_BELT)</b>											
Chlorpyrifos	ug/L	0.014	0.81	ND	NS	ND	NS	0.014	2.57	ND	ND
Diazinon	ug/L	0.1	0.138	ND	NS	ND	NS	0.1	0.278	ND	ND

ND=not detected; NS=no sample collected due to site being dry.

1. Final Dry and Wet Weather WLAs for Stormwater Dischargers effective as of March 24, 2008 (R4-2005-009).

2. Interim Dry and Wet Weather Load Allocations for Irrigated Agriculture; effective until March 24, 2016 (R4-2005-009).

Results in **bold purple type** exceed the final WLA, but not the interim LA. Results in **bold red type** exceed the final WLA and the interim LA.

**Table 24. Metals and Selenium in Water**

Constituent	Units	Dry Interim WLA <sup>1</sup>	Dry Interim LA <sup>2</sup>	Event 44 Dry Aug-2014	Event 45 Dry Nov-2014	Event 48 Dry Feb-2015	Event 49 Dry May-2015	Wet Interim WLA <sup>1</sup>	Wet Interim LA <sup>2</sup>	Event 46 Wet Dec-2014	Event 47 Wet Dec-2014	Annual Average <sup>3</sup>
Revolon Slough – Wood Road (04_ WOOD)												
Total Copper	µg/L	19	19	2.3	2.4	2.6	2.9	204	1390	66.3	90.2	0.5
Total Nickel	µg/L	13	42	6.7	8.1	4.9	6.1	74 <sup>4</sup>	74 <sup>4</sup>	42.5	72.7	
Total Selenium	µg/L	13	6	34.1	19.5	19.5	18.5	290 <sup>4</sup>	290 <sup>4</sup>	0.8	0.9	
Total Mercury <sup>5</sup>	lbs/yr	1.7	2					4	--			
Calleguas Creek – University Drive CSUCI (03_ UNIV)												
Total Copper	µg/L	19	19	2.3	2.4	2.6	2.9	204	1390	27	99.1	0.2
Total Nickel	µg/L	13	42	6.7	8.1	4.9	6.1	74 <sup>4</sup>	74 <sup>4</sup>	27.2	137.3	
Total Selenium	µg/L	--	--	0.5	0.5	0.9	0.9	--	--	0.3	1.7	
Total Mercury <sup>5</sup>	lbs/yr	3.3	3.9					10.5	--			

1. Interim Dry Weather WLAs for Stormwater Dischargers; effective until March 2022 (R4-2006-0012)

2. Interim Dry Weather LAs for Irrigated Agriculture; effective until March 2022 (R4-2006-0012)

3. Mercury allocation is assessed as an annual load in suspended sediment. The water column mercury concentrations were used in calculating the loads, conservatively assuming that all mercury is on suspended sediment rather than being dissolved. The loads at each site are based on estimated annual concentrations (average of all monitored events at each site) and total annual flow calculated from preliminary streamflow data received from real time data loggers.

4. No wet weather exceedances of these constituents were observed in the TMDL analysis so no interim limits were assigned for the TMDL. For comparison purposes the wet weather targets are included in the table.

5. Interim WLA and LAs are expressed as annual loads. Total annual flow for 07/01/14 to 06/31/15 into Mugu Lagoon from Calleguas Creek and Revolon Slough is calculated as 6,102 Mgal/yr. As such, the interim WLA and LA shown correspond to the flow range of 0 to 15,000 to Mgal/yr, per R4-2006-0012.

Results in **bold red type** exceed applicable interim WLA and LA.

**Table 25. Monthly Mean Salts Concentrations**

	Units	Interim Limit		Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
		WLA	LA												
Revolon Slough – Wood Road (04_WOOD)															
Total Dissolved Solids	mg/L	1720	3995	3730	3544	3489	2727	3297	3510	3374	3316	3237	3132	3188	3692
Chloride	mg/L	230	230	210	200	197	155	186	198	190	187	183	177	180	208
Sulfate	mg/L	1289	1962	1982	1883	1854	1449	1752	1865	1793	1762	1720	1664	1694	1962
Boron	mg/L	1.3	1.8	1.93	1.84	1.81	1.42	1.71	1.82	1.75	1.72	1.68	1.62	1.65	1.91
Calleguas Creek – University Drive CSUCI (03_UNIV)															
Total Dissolved Solids	mg/L	1720	3995	1031	1070	1081	1090	1114	1008	1039	1049	1061	1082	1093	1073
Chloride	mg/L	230	230	217	225	228	230	235	211	218	220	223	228	230	226
Sulfate	mg/L	1289	1962	264	274	276	278	284	258	266	268	272	276	279	274
Conejo Creek – Howard Road Bridge (9A_HOWAR)															
Total Dissolved Solids	mg/L	1720	3995	957	1014	1012	1041	1063	964	979	985	1015	1028	1040	1024
Chloride	mg/L	230	230	205	218	217	224	229	206	210	211	218	221	224	220
Sulfate	mg/L	1289	1962	240	255	255	262	268	242	246	248	255	259	262	258
Conejo Creek – Baron Brothers Nursery (9B_BARON)															
Total Dissolved Solids	mg/L	1720	3995	689	707	687	711	750	789	777	766	763	768	773	752
Chloride	mg/L	230	230	154	158	153	159	169	178	175	172	172	173	174	169
Sulfate	mg/L	1289	1962	171	176	171	177	187	197	194	191	190	191	192	187
Arroyo Simi – Tierra Rejada Road (07_TIERRA)															
Total Dissolved Solids	mg/L	1720	3995	1152	1145	1141	1138	1151	1209	1189	1177	1174	1179	1184	1202
Chloride	mg/L	230	230	173	172	171	171	173	182	179	177	176	177	178	181
Sulfate	mg/L	1289	1962	433	430	429	427	433	455	448	443	442	444	445	452
Boron	mg/L	1.3	1.8	0.66	0.66	0.66	0.65	0.66	0.69	0.68	0.68	0.67	0.68	0.68	0.69

Notes:

- a. Monthly dry weather mean salt concentrations were generated using mean daily salt concentrations (from 5-min data) for days that met the definition of dry weather in the Salts TMDL (i.e., discharge < 86th percentile flow and no measureable rain in preceding 24 hrs). The 86th percentile of mean daily discharge at 03\_Univ (generated using 5-min discharge data for the period July 1, 2014-June 30, 2015) was used as the flow-related threshold for distinguishing wet and dry days for all five compliance sites. Daily precipitation records for 23 gages in the CCW watershed (accessed via the VCWPD Hydrologic Data Server) were used to determine days with "measureable precipitation". Days were considered as having measureable precipitation if two or more rain gages in the watershed received 0.1 inch or more of precipitation. Results in **bold red type** exceed both the applicable interim WLA and LA. Results in **bold purple type** exceed the interim WLA, but not the interim LA.

## POTW COMPLIANCE

Table 26. Nitrogen Compounds – POTWs

Site & Constituent	Units	Final WLA <sup>1</sup>	Event 44 Dry Aug-14	Event 45 Dry Nov-14	Event 48 Dry Feb-15	Event 49 Dry May-15
<b><i>Simi Valley Water Quality Control Plant (07D_SIMI)</i></b>						
Ammonia as N	mg/L	3.5 <sup>2</sup> , 7.8 <sup>3</sup>	1.3	1.1	0.6	1.4
Nitrate as N	mg/L	9	6.4	5.1	6.1	6.3
Nitrite as N	mg/L	0.9	0.01	0.03	ND	0.03
Nitrate-N + Nitrite-N	mg/L	9	6.4	5.1	6.1	6.3
<b><i>Camarillo Water Reclamation Plan (9AD_CAMA)</i></b>						
Ammonia as N	mg/L	3.1 <sup>2</sup> , 5.6 <sup>3</sup>	1.2	1.2	1.3	0.9
Nitrate as N	mg/L	9	8.1	7.6	5.2	7.7
Nitrite as N	mg/L	0.9	ND	0.5	0.1	ND
Nitrate-N + Nitrite-N	mg/L	9	8.1	8.1	5.2	7.7
<b><i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i></b>						
Ammonia as N	mg/L	2.4 <sup>2</sup> , 3.3 <sup>3</sup>	1.8	1.9	1.7	1.7
Nitrate as N	mg/L	9	7.2	7.3	8	7.4
Nitrite as N	mg/L	0.9	ND	ND	ND	ND
Nitrate-N + Nitrite-N	mg/L	9	7.2	7.3	8	7.4

ND=constituent not detected at the MDL.

1. The effective date for these WLAs was July 16, 2007 (R4-2008-009)

2. WLAs as Average Monthly Effluent Limit

3. WLAs as Maximum Daily Effluent Limit

Table 27. OC Pesticides, PCBs, and Siltation - POTWs

POTW & Constituent	Units	Final WLA <sup>1</sup>	Event 44 Dry Aug-2014	Event 45 Dry Nov-2014	Event 48 Dry Dec-2014	Event 49 Dry May-2015
<b><i>Camarillo Water Reclamation Plant (9AD_CAMA)</i></b>						
Total Chlordane <sup>2</sup>	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	1.7	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	ND	ND
4,4'-DDT	ng/L	1.2	ND	ND	ND	ND
Dieldrin	ng/L	0.28	ND	ND	ND	ND
PCBs <sup>3</sup>	ng/L	0.34	ND	ND	ND	ND
Toxaphene	ng/L	0.33	ND	ND	ND	ND
<b><i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i></b>						
Total Chlordane <sup>2</sup>	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	1.7	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	ND	ND
4,4'-DDT	ng/L	1.2	ND	ND	ND	ND
Dieldrin	ng/L	0.28	ND	ND	ND	ND
PCBs <sup>3</sup>	ng/L	0.34	ND	ND	ND	ND
Toxaphene	ng/L	0.33	ND	ND	ND	ND
<b><i>Simi Valley Water Quality Control Plant (07D_SIMI)</i></b>						
Total Chlordane <sup>2</sup>	ng/L	1.2	ND	ND	ND	ND
4,4'-DDD	ng/L	1.7	ND	ND	ND	ND
4,4'-DDE	ng/L	1.2	ND	ND	DNQ	ND
4,4'-DDT	ng/L	1.2	ND	ND	ND	ND
Dieldrin	ng/L	0.28	ND	ND	ND	ND
PCBs <sup>3</sup>	ng/L	0.34	ND	ND	ND	ND
Toxaphene	ng/L	0.33	ND	ND	ND	ND

ND=constituent not detected at the MDL.

1. Final WLAs were added to each of the POTWs' permits in 2015.

2. Total chlordane is the sum of alpha and gamma-chlordane.

3. PCBs concentrations are the sum of the seven aroclors identified in CTR (1016, 1221, 1232, 1242, 1248, 1254, and 1260).

Table 28. Toxicity, Chlorpyrifos, and Diazinon - POTWs

POTW & Constituent	Units	Final WLA	Event 44 Dry Aug-2014	Event 45 Dry Nov-2014	Event 48 Dry Dec-2014	Event 49 Dry May-2015
<b><i>Camarillo Water Reclamation Plant (9AD_CAMA)</i></b>						
Chlorpyrifos	µg/L	0.0133	ND	ND	ND	0.0008
Diazinon	µg/L	0.1	ND	ND	ND	ND
<b><i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i></b>						
Chlorpyrifos	µg/L	0.014	ND	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND
<b><i>Simi Valley Water Quality Control Plant (07D_SIMI)</i></b>						
Chlorpyrifos	µg/L	0.014	0.002	ND	ND	ND
Diazinon	µg/L	0.1	ND	ND	ND	ND

ND=constituent not detected at MDL.

Table 29. Metals and Selenium - POTWs

POTW & Constituent	Units	Daily Max WLA	Monthly Avg WLA	WLA	Event 44 Dry Aug-2014	Event 45 Dry Nov-2014	Event 48 Dry Dec-2014	Event 49 Dry May-2015
<b><i>Camarillo Water Reclamation Plant (9AD_CAMA)</i></b>								
Total Copper	µg/L	57.0 <sup>1</sup>	20.0 <sup>1</sup>	--	4.7	4.3	3.2	4.2
Total Nickel	µg/L	16.0 <sup>1</sup>	6.2 <sup>1</sup>	--	3.3	2.9	2.4	2.9
Total Mercury <sup>3</sup>	lbs/month <sup>4</sup>	--	--	0.03 <sup>1</sup>	0.0006	0.0002	0.0007	0.0002
<b><i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i></b>								
Total Copper	µg/L	20.0 <sup>1</sup>	16.0 <sup>1</sup>	--	2.9	1.5	3	4.1
Total Nickel	µg/L	8.3 <sup>1</sup>	6.4 <sup>1</sup>	--	2.4	2.7	1.9	1.9
Total Mercury <sup>3</sup>	lbs/month <sup>4</sup>	--	--	0.23 <sup>1</sup>	0.004	0.003	0.02	0.02
<b><i>Simi Valley Water Quality Control Plant (07D_SIMI)</i></b>								
Total Copper	µg/L	31.0 <sup>2</sup>	30.5 <sup>2</sup>	--	6.4	5.7	3.6	4.8
Total Nickel	µg/L	960 <sup>2</sup>	169 <sup>2</sup>	--	1.9	1.7	1.3	1.9
Total Mercury <sup>3</sup>	lbs/month <sup>4</sup>	--	--	0.18 <sup>1</sup>	0.0009	0.0004	0.001	0.0004

1. Interim WLA; effective until March 26, 2017 (R4-2006-012)

2. Final WLA; effective date was March 26, 2007 (R4-2006-012)

3. For total mercury concentrations reported as not detected (ND); one half of the method detection limit was used to calculate the monthly loads

4. During load calculation, the average monthly flow for each POTW was multiplied by the number of days in the month corresponding to when the sample was collected to get a total monthly flow. The total monthly flow was multiplied by the concentration of total mercury to yield the monthly total mercury load in pounds.

**Table 30. Salts - POTWs**

POTW & Constituent	Units	Monthly Avg Interim WLA	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
<b><i>Camarillo Water Reclamation Plant (9AD_CAMA) <sup>1</sup></i></b>														
Boron	mg/L	N/A	0.42	0.49	0.53	0.57	0.51	0.52	0.46	0.42	0.417	0.54	0.57	0.45
Chloride	mg/L	216	215	218	217	212	214	203	212	211	209	215	215	218
Sulfate	mg/L	283	220	275	276	262	267	248	255	248	261	257	290	289
Total Dissolved Solids	mg/L	1012	1032	1110	1084	1040	1026	1018	1026	1032	1008	980	1100	928
<b><i>Hill Canyon Wastewater Treatment Plant (10D_HILL)</i></b>														
Boron	mg/L	N/A	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Chloride	mg/L	189	151	152	143	154	151	151	150	155	153	155	154	153
Sulfate	mg/L	N/A	119	119	122	101	149	177	149	131	157	155	190	164
Total Dissolved Solids	mg/L	N/A	602	615	610	593	656	694	640	639	686	674	729	690
<b><i>Simi Valley Water Quality Control Plant (07D_SIMI)</i></b>														
Boron	mg/L	N/A	0.44	0.5	0.52	0.5	0.48	0.48	0.45	0.46	0.49	0.45	0.5	0.44
Chloride	mg/L	183	136	132	127	132	136	136	140	140	130	154	153	136
Sulfate	mg/L	298	200	196	178	160	209	214	210	210	210	248	247	200
Total Dissolved Solids	mg/L	955	732	776	666	684	746	764	722	761	808	809	829	732

N/A: "The 95<sup>th</sup> percentile concentration is below the Basin Plan objective so interim limits are not necessary."

Results in **bold red type** exceed applicable interim WLA.

1. Due to water conservation and alterations in the composition of the water supply available in the POTW service area, effluent salt concentrations have increased since the adoption of the TMDL. The increased salts concentrations are being addressed through a Time Schedule Order that provides for higher TDS and sulfate interim limits and a stay of interim limits for chloride (SWRCB WQO 2003-0019).

## COMPLIANCE COMPARISON DISCUSSION

### OC Pesticides, Toxicity, Metals, Nutrients, and Salts

The compliance analysis shown in Table 20 through Table 30 above demonstrates that for the most part, the CCW is in compliance with the applicable interim or final WLAs and LAs currently in effect for the Nutrients, OC Pesticides, Toxicity, Salts, and Metals TMDLs. The following observations summarize the compliance status with these load allocations:

- No exceedances of the interim WLAs or LAs for PCBs were observed at any location in the watershed. One exceedance of the 4,4'-DDT interim WLA and LA under the OC Pesticides TMDL was observed in sediments of Conejo Creek.
- Exceedances of numeric targets for Nitrate-N and Nitrate-N + Nitrite-N were observed in Mugu Lagoon, Revolon Slough, Beardsley Wash, Calleguas Creek, Arroyo Las Posas, and Arroyo Simi. Most of the exceedances occurred during dry events, but there was one wet weather exceedance during wet weather in Mugu Lagoon. No exceedances of final nutrient WLAs were measured at any POTW compliance site.
- Four exceedances of the final MS4 WLAs for chlorpyrifos were measured at receiving water sites during the dry weather; however, there were no exceedances of the interim LAs. There were 12 exceedances of the final MS4 chlorpyrifos WLA during wet weather and one instance where the chlorpyrifos concentration was above the final MS4 WLA and the interim LA. In addition, there was one instance where the diazinon final MS4 WLA and interim LA were exceeded during dry weather. There were no exceedances of the final WLAs for chlorpyrifos or diazinon at any POTW.
- There were four exceedances of the interim LA or final MS4 WLA for total selenium measured during the four dry weather sampling events of 2014-2015 at the 04\_WOOD site. As discussed in the TMDL, a primary source of selenium in Revolon Slough is considered to be rising groundwater levels and the interim allocations were to be considered in this context.
- Although toxicity was observed at some locations in the watershed, TIEs were initiated for all samples meeting the requirements in the QAPP. As a result, the Stakeholders are in compliance with the toxicity WLAs and LAs per the requirements of the TMDL.
- In general, receiving water sites were in compliance with interim LAs and MS4 WLAs established by the Salts TMDL; the only exception being exceedances in sulfate and boron measured at 04\_WOOD in the Revolon Slough watershed, and exceedances of chloride limits at 03\_UNIV in the Calleguas Creek watershed. POTWs are in compliance with interim salts WLAs, with the exception of Camarillo Water Reclamation Plant (WRP), which experienced exceedances of chloride, sulfate, and TDS. The exceedances of interim salts WLAs for the Camarillo WRP have resulted from increased influent salt concentrations due to water conservation and a shift in the composition of the water supplied within the service area. Since the process for addressing salts is a watershed effort involving significant capital investments, the Camarillo WRP has received a time schedule order to adjust the interim limits for TDS and sulfate. During the last monitoring year, application of interim limits for chlorine was stayed by State Board

Order 2003-019. As a result, the interim limits in the TMDL are not the currently applicable interim limits for the Camarillo WRP discharge.

### **Nutrients**

Exceedances of numeric targets for Nitrate-N and Nitrate-N + Nitrite-N were observed at sites in Mugu Lagoon, Revolon Slough, Beardsley Wash, Arroyo Las Posas, and Calleguas Creek. Nitrate-N exceedances are summarized in Table 31 below. The table focuses on Nitrate-N results since Nitrate-N + Nitrite-N exceedances were caused by high Nitrate-N values. Nitrite-N was below the 1 mg/L target at all sites and events.

**Table 31. Exceedances of Nitrate-N Numeric TMDL Target of 10 mg/L**

Nitrogen TMDL Compliance Sites	Event 44 Dry	Event 45 Dry	Event 46 Wet	Event 47 Wet	Event 48 Dry	Event 49 Dry
	Aug-14	Nov-14	Dec-14	Dec-14	Feb-15	May-15
01_RR_BR	No	Yes	Yes	No	No	Yes
02_PCH	Yes	Yes	NS	NS	Yes	Yes
03_UNIV	No	No	No	No	No	No
04_WOOD	Yes	Yes	No	No	Yes	Yes
05_CENTR	Yes	No	No	No	Yes	Yes
06_SOMIS	NR	Yes	No	No	Yes	NS
07_HITCH	Yes	No	No	No	Yes	No
07_MADER	No	No	No	No	No	No
9A_HOWAR	No	No	No	No	No	No
9B_ADOLF	No	No	No	No	No	No
10_GATE	No	No	No	No	No	No
12_PARK	No	No	NR	NR	No	No
13_BELT	No	No	NR	NR	No	No

NR=not required

No signifies that monitoring results were below the Nitrate-N target during the monitoring event.

Yes signifies that monitoring results were above the Nitrate-N target during the monitoring event.

Nitrogen exceedances occurred primarily in areas of the watershed with agricultural inputs. Reaches downstream of POTW discharges are generally in compliance with the TMDL requirements and urban discharges were determined to be negligible during the TMDL analysis and therefore do not have TMDL allocations. The final nitrogen LAs for agriculture became effective in July 2010. The exceedances of the nitrogen LAs since that time have triggered the inclusion of nitrogen in the AWQMP required under the Ag Waiver that is currently being implemented in the CCW. Agricultural education courses have included various classes focused on nitrogen management; AWQMP implementation will continue to target nitrogen and include BMPs to address these exceedances. Compliance with the load allocations is determined through implementation of the AWQMP.

### **Chlorpyrifos**

Further examination of the chlorpyrifos exceedances at receiving water sites was needed to assess whether urban dischargers caused the exceedance of the receiving water allocations. The

WLAs for urban dischargers are assessed in the receiving water, while agricultural dischargers are not yet required to be in compliance with the chlorpyrifos final load allocations. Monitoring data at urban land use sites from each subwatershed for which an exceedance was observed was compared to the WLA to determine if MS4 discharges exceeded the allocation during the monitoring event where elevated receiving water concentrations were observed. If the urban land use data were below the WLA, the MS4 dischargers were considered to be in compliance with the WLAs. If the urban land use data were above the WLA, the MS4 could be contributing to the exceedance in the receiving water.

As shown in Table 32, there were 16 exceedances of chlorpyrifos targets at the receiving water sites. In most cases, urban land use data for the same event was less than the interim MS4 WLA for chlorpyrifos. However, in two cases, the urban land use data for the same event exceeded the final WLA, but did not exceed the interim LA. In addition, in one case, the urban land use data exceeded the MS4 WLA and the interim LA for chlorpyrifos.

The urban land use site data for diazinon did not exceed the MS4 WLA during the same event the receiving water site had an exceedance of the diazinon MS4 WLA.

**Table 32. Compliance and Land Use Sites Comparison to Determine MS4 Chlorpyrifos WLA Compliance**

Sites Exceeding WLAs	Constituent	Event 44 Dry Aug-14	Event 45 Dry Nov-14	Event 46 Wet Dec-14	Event 47 Wet Dec-14	Event 48 Dry Feb-15	Event 49 Dry May-15
01_RR_BR	Chlorpyrifos		NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>		
03_UNIV	Chlorpyrifos		NA <sup>1</sup>	NA <sup>1</sup>	NA <sup>1</sup>		
04_WOOD	Chlorpyrifos		No	Yes	Yes <sup>2</sup>		
06_SOMIS	Chlorpyrifos			NA <sup>1</sup>	NA <sup>1</sup>		
07_HITCH	Chlorpyrifos	No		No	No		
9B_ADOLF	Chlorpyrifos			Yes <sup>2</sup>	No		
04_WOOD	Diazinon		No				

No= none of the MS4 land use site for the subwatershed exceeded the MS4 WLA during the monitoring event.

Yes=the MS4 land use site for the subwatershed exceeded the MS4 WLA during the monitoring event.

1. There are no urban land use monitoring sites in these reaches.

2. Urban land use sites exceeded the MS4 WLA, but not the interim LA

Blank cells indicate that a WLA exceedance did not occur at the compliance monitoring site during a particular event.

## Selenium

Selenium concentrations in Revolon Slough at 04\_WOOD exceeded the urban dischargers interim MS4 WLA and the agricultural dischargers interim LA during all four dry weather monitoring events. A summary of monitoring results for total selenium at sites in the Revolon Slough subwatershed is shown in Table 33 below. For discussion purposes both dry weather and wet weather monitoring results are included in the table.

**Table 33. Selenium Monitoring Data (ug/L) in the Revolon Slough Subwatershed**

Site ID	Use	Dry Weather Events						Wet Weather Events		
		Interim WLA <sup>1</sup>	LA <sub>1</sub>	44 Aug-14	45 Nov-14	48 Feb-15	49 May-15	Target <sub>2</sub>	46 Dec-14	47 Dec-14
04_WOOD	RW	13	6	<b>34.1</b>	<b>19.5</b>	<b>19.5</b>	<b>18.5</b>	290	0.8	0.9
04D_WOOD	Ag		6	NS	1.9	1.3	0.6	290	0.9	1.1
05D_SANT_VCWPD	Ag		6	<b>46</b>	<b>46.2</b>	<b>12.5</b>	<b>45.7</b>	290	7.7	1.7
04D_VENTURA	Urban	13		0.3	0.4	0.3	0.6	290	0.07	0.1

1. Interim WLAs for stormwater permittees and interim LAs for agricultural dischargers are effective until March 2022 (R4-2006-012).

2. No wet weather exceedances were observed in the TMDL analysis so no interim limits were assigned for the TMDL. For comparison purposes, the wet weather targets were included in this table.

RW – Receiving water compliance site; Ag – Agricultural; Urban – Urban

NS – Not sampled, dry

Results in **bold type** exceed applicable interim WLA or interim LA.

As noted in the table above, high levels of selenium were also observed at 05D\_SANT\_VCWPD, an agricultural use site in the upper reach of the subwatershed. As discussed in the TMDL, a primary source of selenium in Revolon Slough is considered to be rising groundwater levels and the interim allocations were to be considered in this context.

## Salts

TDS, sulfate, and boron concentrations in Revolon Slough at 04\_WOOD exceeded the interim MS4 WLA during all twelve months of the monitoring period. In addition, sulfate concentrations exceeded the both the interim WLA and the LA during two months of the monitoring period, while boron concentrations exceeded both the interim WLA and the LA during five months of the monitoring period. A summary of monitoring results for total dissolved solids, sulfate, and boron at sites in the Revolon Slough subwatershed are shown in Table 34 through Table 36 below.

**Table 34. Total Dissolved Solids Monitoring Data (mg/L) in Revolon Slough**

Site ID	Use	Interim Limits		Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
		WLA	LA												
04_WOOD <sup>1</sup>	RW	1720	3995	<b>3730</b>	<b>3544</b>	<b>3489</b>	<b>2727</b>	<b>3297</b>	<b>3510</b>	<b>3374</b>	<b>3316</b>	<b>3237</b>	<b>3132</b>	<b>3188</b>	<b>3692</b>
04D_WOOD <sup>2</sup>	Ag		3995		NS			1480			1010			1830	
04D_VENTURA <sub>2</sub>	Urban	1720			730			800			1150			5740	

NS=no sample, dry

1. Data presented are monthly means

2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed applicable interim WLA or interim LA.

**Table 35. Sulfate Monitoring Data (mg/L) in Revolon Slough**

Site ID	Use	Interim Limits		Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
		WLA	LA												
04_WOOD <sup>1</sup>	RW	1289	1962	<b>1982</b>	<b>1883</b>	<b>1854</b>	<b>1449</b>	<b>1752</b>	<b>1865</b>	<b>1793</b>	<b>1762</b>	<b>1720</b>	<b>1664</b>	<b>1694</b>	<b>1962</b>
04D_WOOD <sup>2</sup>	Ag		1962		NS			688			344			926.4	
04D_VENTURA <sub>2</sub>	Urban	1289			210			271			281			348	

NS=no sample, dry

1. Data presented are monthly means

2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed applicable interim WLA or interim LA.

**Table 36. Boron Monitoring Data (mg/L) in Revolon Slough**

Site ID	Use	Interim Limits		Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
		WLA	LA												
04_WOOD <sup>1</sup>	RW	1.3	1.8	<b>1.93</b>	<b>1.84</b>	<b>1.81</b>	<b>1.42</b>	<b>1.71</b>	<b>1.82</b>	<b>1.75</b>	<b>1.72</b>	<b>1.68</b>	<b>1.62</b>	<b>1.65</b>	<b>1.91</b>
04D_WOOD <sup>2</sup>	Ag		1.8		NS			0.80			0.46			1.05	
04D_VENTURA <sub>2</sub>	Urban	1.3			0.30			0.33			0.57			0.40	

NS=no sample, dry

1. Data presented are monthly means

2. Data presented are quarterly dry weather grabs

Results in **bold type** exceed the applicable interim WLA or interim LA



As noted in the previous tables, high levels of total dissolved solids, sulfate, and boron were measured at the 04D\_WOOD throughout the monitoring period, exceeding the interim MS4 WLAs for all constituents. In addition, sulfate and boron exceeded the interim LAs, twice and five times respectively. However, measured concentrations did not exceed the interim agricultural LAs. This site represents agricultural discharge water quality in the Revolon Slough subwatershed. Samples were not taken during the August 2014 sampling event due to no flow being present. 04D\_VENTURA, which is an urban land use site in the upper Revolon Slough watershed, had concentrations consistently below the interim MS4 WLAs for TDS, sulfate, and boron. The persistent dry conditions in the watershed may be contributing to the higher salts concentrations observed in the receiving waters.

## Revisions and Recommendations

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The QAPP specifies that upon the completion of each CCWTMP annual report, revisions to standard procedures will be made, including: site relocation, ceasing monitoring efforts and/or deleting certain constituents from sample collection. An updated QAPP was submitted in December 2014 that incorporated the proposed revisions and recommendations included in the previous six CCWTMP annual reports. Additional modifications that reflect the most current lab methods and procedures for the field conditions were also part of the QAPP update process. Monitoring for the 2015-2016 monitoring year is currently being conducted per the revised QAPP. At this time, the Stakeholders do not have any proposed revisions and recommendations, but may have some upon completion of the first monitoring year under the updated QAPP. These will be incorporated into the 2015-2016 eighth-year annual report.